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HUMAN TELOMERASE

ATGCCGCGCGCTCCCCGCTGCCGAGCCGTGCGCTCCCTGCTGCGCAGCCACTACCGCGAG 60
MetProArgAlaProArgCysArgAlaValArgSerLeuLeuArgSerHisTyrArgGlu 20

GTGCTGCCGCTGGCCACGTTTCGTGCGGCGCCTGGGGCCCCAGGGCTGGCGGCTGGTGCAG 120
ValLeuProLeuAlaThrPheValArgArgLeuGlyProGlnGlyTrpArgLeuValGln 40

CGCGGGGACCCGGCGGCTTTCCGCGCGCTGGTGGCCCCAGTGCCTGGTGTGCGTGCCCTGG 180
ArgGlyAspProAlaAlaPheArgAlaLeuValAlaGlnCysLeuValCysValProTrp 60

GACGCACGGCGCCCCCGCGCCCCCTCCTTCGCCAGGTGTCCTGCCTGAAGGAGCTG 240
AspAlaArgProProProAlaAlaProSerPheArgGlnValSerCysLeuLysGluLeu 80

GTGGCCCGAGTGCTGCAGAGGCTGTGCGAGCGCGGCGCAAGAACGTGCTGGCCTTCGGC 300
ValAlaArgValLeuGlnArgLeuCysGluArgGlyAlaLysAsnValLeuAlaPheGly 100

TTCGCGCTGCTGGACGGGGCCCGGGGGCCCCCGAGGCCTTACCACCAGCGTGCGC 360
PheAlaLeuLeuAspGlyAlaArgGlyGlyProProGluAlaPheThrThrSerValArg 120

AGCTACCTGCCCAACACGGTGACCGACGCACTGCGGGGGAGCGGGGCGTGGGGGCTGCTG 420
SerTyrLeuProAsnThrValThrAspAlaLeuArgGlySerGlyAlaTrpGlyLeuLeu 140

TTGCGCCGCGTGGGCGACGACGTGCTGGTTACCTGCTGGCACGCTGCGCGCTCTTTGTG 480
LeuArgArgValGlyAspAspValLeuValHisLeuLeuAlaArgCysAlaLeuPheVal 160

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LeuValAlaProSerCysAlaTyrGlnValCysGlyProProLeuTyrGlnLeuGlyAla 180

GCCACTCAGGCCCGGCCCGCCACACGCTAGTGGACCCCGAAGGCGTCTGGGATGCGAA 600
AlaThrGlnAlaArgProProProHisAlaSerGlyProArgArgArgLeuGlyCysGlu 200

CGGGCCTGGAACCATAGCGTCAGGGAGGCCGGGGTCCCCCTGGGCCTGCCAGCCCCGGGT 660
ArgAlaTrpAsnHisSerValArgGluAlaGlyValProLeuGlyLeuProAlaProGly 220

GCGAGGAGCGCGGGGGCAGTGCCAGCCGAAGTCTGCCGTTGCCCAAGAGGCCAGGCGT 720
AlaArgArgArgGlyGlySerAlaSerArgSerLeuProLeuProLysArgProArgArg 240

Fig. 1A



GGCGCTGCCCTGAGCCGGAGCGGACGCCCGTTGGGCAGGGGTCCTGGGCCCACCCGGGC 780
GlyAlaAlaProGluProGluArgThrProValGlyGlnGlySerTrpAlaHisProGly 260

AGGACGCGTGGACCGAGTGACCGTGGTTTCTGTGTGGTGTACCTGCCAGACCCGCCGAA 840
ArgThrArgGlyProSerAspArgGlyPheCysValValSerProAlaArgProAlaGlu 280

GAAGCCACCTCTTTGGAGGGTGCCTCTCTGGCACGCGCCACTCCCACCCATCCGTGGGC 900
GluAlaThrSerLeuGluGlyAlaLeuSerGlyThrArgHisSerHisProSerValGly 300

CGCCAGCACACGCGGGCCCCCATCCACATCGCGGCCACCACGTCCCTGGGACACGCCT 960
ArgGlnHisHisAlaGlyProProSerThrSerArgProProArgProTrpAspThrPro 320

TGTCCCCCGGTGTACGCCGAGACCAAGCACTTCCTCTACTCCTCAGGCGACAAGGAGCAG 1020
CysProProValTyrAlaGluThrLysHisPheLeuTyrSerSerGlyAspLysGluGln 340

CTGCGGCCCTCCTTCTACTCAGCTCTCTGAGGCCAGCCTGACTGGCGCTCGGAGGCTC 1080
LeuArgProSerPheLeuLeuSerSerLeuArgProSerLeuThrGlyAlaArgArgLeu 360

GTGGAGACCATCTTTCTGGGTTCCAGGCCCTGGATGCCAGGGACTCCCCGAGGTTGCCC 1140
ValGluThrIlePheLeuGlySerArgProTrpMetProGlyThrProArgArgLeuPro 380

CGCCTGCCCCAGCGCTACTGGCAAATGCGGCCCTGTTTCTGGAGCTGCTTGGGAACCAC 1200
ArgLeuProGlnArgTyrTrpGlnMetArgProLeuPheLeuGluLeuLeuGlyAsnHis 400

GCGCAGTGCCCTACGGGGTGCTCCTCAAGACGCACTGCCGCTGCGAGCTGCGGTACCC 1260
AlaGlnCysProTyrGlyValLeuLeuLysThrHisCysProLeuArgAlaAlaValThr 420

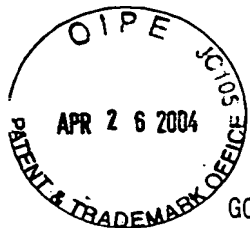
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ProAlaAlaGlyValCysAlaArgGluLysProGlnGlySerValAlaAlaProGluGlu 440

GAGGACACAGACCCCGTGCCTGGTGCAGCTGCTCCGCCAGCACAGCAGCCCTGGCAG 1380
GluAspThrAspProArgArgLeuValGlnLeuLeuArgGlnHisSerSerProTrpGln 460

GTGTACGGCTTCGTGCGGGCTGCCTGCGCCGGTGGTGGCCCCAGGCCTCTGGGGCTCC 1440
ValTyrGlyPheValArgAlaCysLeuArgArgLeuValProProGlyLeuTrpGlySer 480

AGGCACAACGAACGCCGCTTCCTCAGGAACACCAAGAAGTTCATCTCCCTGGGGAAGCAT 1500
ArgHisAsnGluArgArgPheLeuArgAsnThrLysLysPheIleSerLeuGlyLysHis 500

Fig. 1B



GCCAAGCTCTCGCTGCAGGAGCTGACGTGGAAGATGAGCGTGCGGGGCTGCGCTTGGCTG 1560
AlaLysLeuSerLeuGlnGluLeuThrTrpLysMetSerValArgAspCysAlaTrpLeu 520

CGCAGGAGCCCAGGGGTTGGCTGTGTTCCGGCCGAGAGCACCGTCTGCGTGAGGAGATC 1620
ArgArgSerProGlyValGlyCysValProAlaAlaGluHisArgLeuArgGluGluIle 540

CTGGCCAAGTTCCTGCACTGGCTGATGAGTGTGTACGTGCTGAGCTGCTCAGGTCTTTC 1680
LeuAlaLysPheLeuHisTrpLeuMetSerValTyrValValGluLeuLeuArgSerPhe 560

TTTTATGTCACGGAGACCACGTTTCAAAGAACAGGCTCTTTTTCTACCGAAGAGTGTC 1740
PheTyrValThrGluThrThrPheGlnLysAsnArgLeuPhePheTyrArgLysSerVal 580

TGGAGCAAGTTGCAAAGCATTGGAATCAGACAGCACTTGAAGAGGGTGAGCTGCGGGAG 1800
TrpSerLysLeuGlnSerIleGlyIleArgGlnHisLeuLysArgValGlnLeuArgGlu 600

CTGTCGGAAGCAGAGGTCAGGCAGCATCGGGAAGCCAGGCCCGCCCTGCTGACGTCCAGA 1860
LeuSerGluAlaGluValArgGlnHisArgGluAlaArgProAlaLeuLeuThrSerArg 620

CTCCGCTTCATCCCCAAGCCTGACGGGCTGCGGCCGATTGTGAACATGGACTACGTGCTG 1920
LeuArgPheIleProLysProAspGlyLeuArgProIleValAsnMetAspTyrValVal 640

GGAGCCAGAACGTTCCGCAGAGAAAAGAGGGCCGAGCGTCTCACCTCGAGGGTGAAGGCA 1980
GlyAlaArgThrPheArgArgGluLysArgAlaGluArgLeuThrSerArgValLysAla 660

CTGTTACGCGTGCTCAACTACGAGCGGGCGCGGCCCGCCCTCCTGGGCGCCTCTGTG 2040
LeuPheSerValLeuAsnTyrGluArgAlaArgArgProGlyLeuLeuGlyAlaSerVal 680

CTGGGCCTGGACGATATCCACAGGGCCTGGCGCACCTTCGTGCTGCGTGTGCGGGCCAG 2100
LeuGlyLeuAspAspIleHisArgAlaTrpArgThrPheValLeuArgValArgAlaGln 700

GACCCGCCGCTGAGCTGTACTTTGTCAAGGTGGATGTGACGGGCGCGTACGACACCATC 2160
AspProProProGluLeuTyrPheValLysValAspValThrGlyAlaTyrAspThrIle 720

CCCCAGGACAGGCTCACGGAGGTCATCGCCAGCATCATCAAACCCAGAACACGTAAGTGC 2220
ProGlnAspArgLeuThrGluValIleAlaSerIleIleLysProGlnAsnThrTyrCys 740

GTGCGTCGGTATGCCGTGGTCCAGAAGGCCGCCCATGGGCAGTCCGCAAGGCCTTCAAG 2280
ValArgArgTyrAlaValValGlnLysAlaAlaHisGlyHisValArgLysAlaPheLys 760

Fig. 1C



AGCCACGTCTCTACCTTGACAGACCTCCAGCCGTACATGCGACAGTTCGTGGCTCACCTG SerHisValSerThrLeuThrAspLeuGlnProTyrMetArgGlnPheValAlaHisLeu	2340 780
CAGGAGACCAGCCCCGTGAGGGATGCCGTGTCATCGAGCAGAGCTCCTCCCTGAATGAG GlnGluThrSerProLeuArgAspAlaValValIleGluGlnSerSerSerLeuAsnGlu	2400 800
GCCAGCAGTGGCCTCTTCGACGTCTTCTACGCTTCATGTGCCACCAGCCGTGCGCATC AlaSerSerGlyLeuPheAspValPheLeuArgPheMetCysHisHisAlaValArgIle	2460 820
AGGGGCAAGTCTACGTCCAGTGCCAGGGGATCCCGCAGGGCTCCATCCTCTCCACGCTG ArgGlyLysSerTyrValGlnCysGlnGlyIleProGlnGlySerIleLeuSerThrLeu	2520 840
CTCTGCAGCCTGTGCTACGGCGACATGGAGAACAAGCTGTTTGGGGGATTGGCGGGAC LeuCysSerLeuCysTyrGlyAspMetGluAsnLysLeuPheAlaGlyIleArgArgAsp	2580 860
GGGCTGCTCCTGCGTTTGGTGGATGATTTCTTGTGGTGACACCTCACCTACCCACGCG GlyLeuLeuLeuArgLeuValAspAspPheLeuLeuValThrProHisLeuThrHisAla	2640 880
AAAACCTTCCTCAGGACCCTGGTCCGAGGTGTCCCTGAGTATGGCTGCGTGGTGAACCTG LysThrPheLeuArgThrLeuValArgGlyValProGluTyrGlyCysValValAsnLeu	2700 900
CGGAAGACAGTGGTGAACCTCCCTGTAGAAGACGAGGCCCTGGGTGGCACGGCTTTTGTT ArgLysThrValValAsnPheProValGluAspGluAlaLeuGlyGlyThrAlaPheVal	2760 920
CAGATGCCGGCCACGGCCTATTCCCCTGGTGCGGCCTGCTGCTGGATACCCGGACCCTG GlnMetProAlaHisGlyLeuPheProTrpCysGlyLeuLeuLeuAspThrArgThrLeu	2820 940
GAGGTGCAGAGCGACTACTCCAGCTATGCCCGGACCTCCATCAGAGCCAGTCTCACCTTC GluValGlnSerAspTyrSerSerTyrAlaArgThrSerIleArgAlaSerLeuThrPhe	2880 960
AACCGCGGCTTCAAGGCTGGGAGGAACATGCGTCGCAAACTCTTTGGGTCTTGCGGCTG AsnArgGlyPheLysAlaGlyArgAsnMetArgArgLysLeuPheGlyValLeuArgLeu	2940 980
AAGTGTACAGCCTGTTTCTGGATTTGCAGGTGAACAGCCTCCAGACGGTGTGCACCAAC LysCysHisSerLeuPheLeuAspLeuGlnValAsnSerLeuGlnThrValCysThrAsn	3000 1000
ATCTACAAGATCCTCCTGCTGCAGGCGTACAGGTTTCACGCATGTGTGCTGCAGCTCCCA IleTyrLysIleLeuLeuLeuGlnAlaTyrArgPheHisAlaCysValLeuGlnLeuPro	3060 1020

Fig. 1D



TTTCATCAGCAAGTTTGAAGAACCCACATTTTCTGCGCGTCATCTCTGACACGGCC 3120
PheHisGlnGlnValTrpLysAsnProThrPhePheLeuArgValIleSerAspThrAla 1040

TCCCTCTGCTACTCCATCCTGAAAGCCAAGAACGCAGGGATGTCGCTGGGGGCCAAGGGC 3180
SerLeuCysTyrSerIleLeuLysAlaLysAsnAlaGlyMetSerLeuGlyAlaLysGly 1060

GCCGCCGGCCCTCTGCCCTCCGAGGCCGTGCAGTGGCTGTGCCACCAAGCATTCTGCTC 3240
AlaAlaGlyProLeuProSerGluAlaValGlnTrpLeuCysHisGlnAlaPheLeuLeu 1080

AAGCTGACTCGACACCGTGTACCTACGTGCCACTCCTGGGGTCACTCAGGACAGCCCAG 3300
LysLeuThrArgHisArgValThrTyrValProLeuLeuGlySerLeuArgThrAlaGln 1100

ACGCAGCTGAGTCGGAAGCTCCCGGGGACGACGCTGACTGCCCTGGAGGCCGCAGCCAAC 3360
ThrGlnLeuSerArgLysLeuProGlyThrThrLeuThrAlaLeuGluAlaAlaAlaAsn 1120

CCGGCACTGCCCTCAGACTTCAAGACCATCCTGGACTgatggccaccgcccacagccag 3420
ProAlaLeuProSerAspPheLysThrIleLeuAsp 1132

Gccgagagcagacaccagcagccctgtcacgccgggctctacgtcccagggaggaggagg 3480
Cggcccacaccagggccgcaccgctgggagtctgaggcctgagtgagtgtttggccgag 3540
gcctgcatgtccggctgaaggctgagtgtccggctgaggcctgagcgagtgtccagccaa 3600
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ccccagggccagcttttcctcaccaggagcccggttccactccccacataggaatagtc 3720
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catccaggtggagaccctgagaaggaccctgggagctctgggaatttgagtgaccaaag 3840
gtgtgccctgtacacaggcgaggaccctgcacctggatgggggtccctgtgggtcaaatt 3900
ggggggagggtgctgtgggagtaaaatactgaatatatgagttttcagttttgaaaaaaa 3960
aaaa 3964

Fig. 1E



Euplotes 1 -----MEVDVDNOADNHGHSALKTCEEIKEAKTLYSWIQKVIRCR--NQSQSHYKDLEDIA
HT1 1 RRLGPQGWRLVQRGDPAAFRALVAQCLVCVPWDAR-PPPAAPSFQVQSCLKELVARVLQRLCERGAKNVLAFGFALLDGA
EST2 1 -----MKILFEFIQDKLDID--LOTNSTYKENLKG

Euplotes 56 IFAQTNIVATPRDYNEEDFKVIARK-----EVFSTGLMIELIDKCLVELLSDDSDRQKLQCFGFQKGNQ-LAK
HT1 80 RGGPPEAFTTSVRSYLPNTVTDALRGSGAWGLLLRRVGDDVLVHLLARCALFVLVAPSCAY--QVCGPPLYQLGAATQA
EST2 30 HFNGLDEILT-FCALPNSRKIALP-----CLPGDLSHKAVIDHCIIYLLTGELYN--VLTFGYKIARVEDVNN

Euplotes 126 THLLTALSTQKQYFFQDEWQVRAMIGNELFRHLYTKYLIFQRTSEGLVQFCGWNVFDHLKVNDKFDKKQKGAADMNE
HT1 157 RPPPHASGPRRRLGCERAWWHSVREAGVPLGLPAGARRRGGSASRSLPLKPRRGAAPERTPVGGGSWAHPGRTG
EST2 97 SLFCHSANVNVTLKGAAWKMFHSLVGTAFVDLLINYTVIQFNGQ-FFTQIVGNRCNEPLPKWVQRSSS-----

Euplotes 206 PRCCSTCKYNVKNEDHFLNII-----NVPNWNMKSRTIFCYTHFNRNQQF
HT1 237 PSDRGFCVSPARPAEEATSLEGALSGTRHSHPSVGRQHHAGPPSTSRPPRPWDTPCPPVYAETKHFLYSSGDK--EQLR
EST2 169 ----SATAAQIKQLTEPVTN-----KQFLHKLIN--SSSF

Euplotes 255 KKHEFVSNKNNISAM-DRAQTIFTNI-----FRFNRIKKLKDVKIEKIAYMLEKVDFNFNYLTKSCPLPENWRE
HT1 315 PSFLLSSLRPSLTGARRLVETIFLGSRPWMPGTPRRLPRLPQRY-WQMRPLFELLGNHAQCPYGVLLKTHCPLRAAVTP
EST2 200 PYSKILPSSSIKKLTLREAIFF-----TNLVKIPQRLKVRINLTQKLLKRHKRLNYVSILNSICPLEGT--

Telomerase domain

Euplotes 326 RK-----QKIENLINKTREEKS--KYEEELFSYTTDNKCVTQFINEFFYNILPKDFLTGR-NRKNFQKKVKKYVELNKHE
HT1 394 AAGVCAREKPGGSVAPEEEDTDPRLVQLLRQHSSPWQVYGFVRACLRRLVPPGLWGSRHNERFLRNTKKFISLGKHA
EST2 268 -----VLDLSHLSRQ-----SPKERVLFIIIVILQKLLPQEMFGSKKNKGKIKNLNLLLSPLNG

Euplotes 398 LIHKNLLEKINTREISWMOVET-SAKHFYFDHENIYVLWKLRLWIFEDLVVSLIRCFFYVTEQQKSYSKTYYYRKNIW
HT1 474 KLSLQELTWKMSVRDCAWLRSPGVGCVPAAEHRLREEILAKFLHWMVYVVELLSFFYVTTTFQKNRLFFYRKSVM
EST2 324 YLPFDSLLKKLRLKDFRWFISD-IWFTKHNFENLN-QLAICFISWLFRLPKIIQTFFYCTEIS-STVTIVYFRHDTW

Motif 1 Motif2

Euplotes 477 DVIMKMSIADLKK-ETLAEVQEKEVEEWKSL-GFAPGKLRLIPKKT--FRPIMTFNKKIVNSDRK--TTKLTNTKLL
HT1 554 SKLQSIGIRQHLKRVQLRELSAEVVRQHREARPALLTSRLRFIPKPDG--LRPIVNM DYVVGARTFRREKRAERLTSRVK
EST2 401 NKLITPFI VEYFK-TYLVENNVCNRHNSYTLS-NFNHSMRIIPKKSNEFRIIAIPCRGADEEFT--IYKENHKNAIQ

Fig. 2A



Motif A

Euplotes 551 NSHLMKTLKN-RMFKDPFGFAVFNYYDDVMKKYEEFVCKWKQVGQP-KLFFATMDIEKCYDSVNREKLSTFLKTTKLLSS
HT1 632 ALFSVLNYERARR--PGLLGASVLGLDDIHRWRTFVLRVRAQDPPPELYFVKVDVTGAYDTIPQDRLTEVIASIIKPCW
EST2 477 PTOKILEYLRNKRPTSFTKIYSPTQIADRIKEFKQRLKKFNVL P-ELYFMKF DVKSCYDSIPRMECMRILKDALKNE

Euplotes 629 DFWIMTAQILKRKWNIVIDSKVFRKKEMKDYFRQKFQKIALEGGQYPTLFSVLENEQNDLNAKKT LIVEAK-QRWYFKKD
HT1 710 TYCVRRYAVVQKAAHGHVRKAFKSHVS-----TLTDLPYMRQFVAHLQETSPLRDAVVIEQSSSLNEASSG
EST2 556 GFFVRSQYFFN-TNTGVKLKLFNVVN-----A--SRVPKPYELYIDNVRTVHLSNQDVINVV-EMEIFKT-

Motif B

Motif C

Euplotes 708 NLLQPVINICQYNYINFNGFYKQTKGIPQGLCVSSILSSFYATLEESSLGFLRDESMNPENPNVNLMLRLTDDYLLIT
HT1 777 LFDVFLRFMCHAVRIR-GKSYVQCQGI PQGSILSTLLCSLCYGD MEN---KLFAGIRRD-----GLLLRLVDDFLLV
EST2 616 --ALWVEDKCYIR-----EDGLFQGSLSAPIVDLVYDDLLEFYSEFKASPSQD-----TLILKLADDFLIIS

Motif D

Motif E

Euplotes 788 TQENNAVLFIKELINVSRENGFKFMKKLQTSFPLSPSKFAKYGMDSVEEQNI VQDYCDWIGISIDMKTLALMPNIMLRI
HT1 847 PHLTHAKTFLRTLVRGVPEYGCVVNLRKTVVNFVPEDEALGG-TAFVQMPAHGLFPWCGLLLDTRTLEVOQSDYSSYAR--
EST2 677 TDQQ-QVINIKKLAGM---GFOKYNAKANRDKILAVS-----SQSDDDTVIQFCAMHIFVKELEVWKHSSTMW---

Euplotes 868 EGILCTLNLMMQTKKASMWLKKKLSFLMNNITHYFRKTITTEDFANKTLNKLFISSGGYKYMQCAKEY--KDHFKKNLAM
HT1 924 TSIRASLTFRGFKAGRNMRRKLFGLVRLKCHSLFLDLQVNSLQTVCTNIYKILLQAYRFHACVLQLPFHQQVWKNPTF
EST2 741 -----NFHIRSKSS---KGIFRSLIALFNTRISYKTIDTNLSTNTVLMQIDHVVKNISECYKSA--FKDLSINVTO

Euplotes 946 SSMIDLEVSKIIYSVTRAFFKYLCNICKDTIFGEEHYDPDFLSTLKHFIETSTKKYIFNRVCMILKAKEAKLKSDQCQS
HT1 1004 FLRVISDTASLCYSILKAKNAGMSLGAAGAAGPLPSEAVQWLC-HQAFLLKLTRHRVTVPLLSLRTAQTQLSRKLPQT
EST2 808 NMQFHSFLQRJIENTVSG----CPITKCDPLIEYEVR--FTI--LNGFLESLSNNTSKF-KDNIILLRKEIQHLQAYIYI

Euplotes 1026 LIQYDA-----
HT1 1083 TLTALEAAANPALPSDFKTILD
EST2 879 YIHIVN-----

Fig. 2B

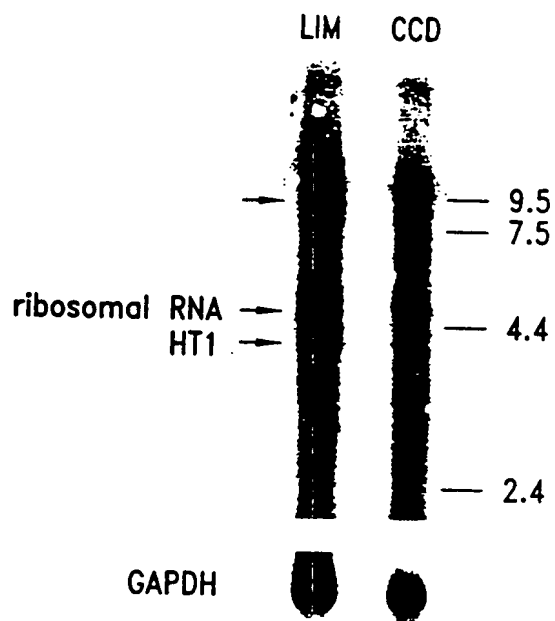
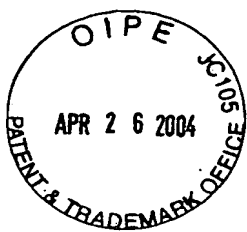


Fig. 3



Plasmid			Human blood					LIM1215				
10	5	1	H	E	P	X	B	H	E	P	X	B



Fig. 4

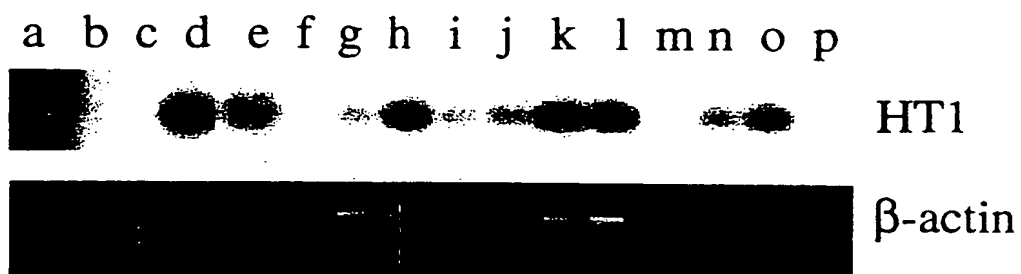


Fig. 5

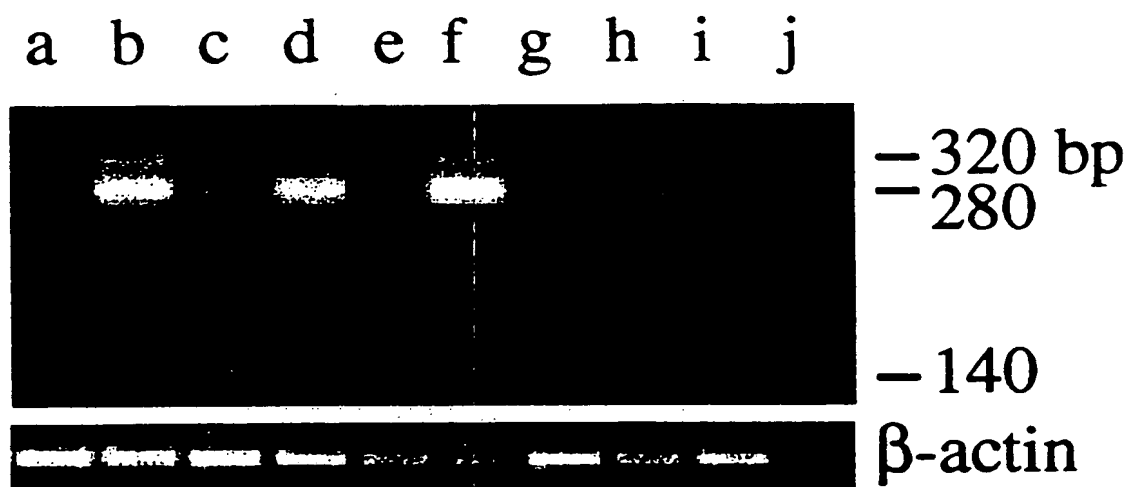


Fig. 6

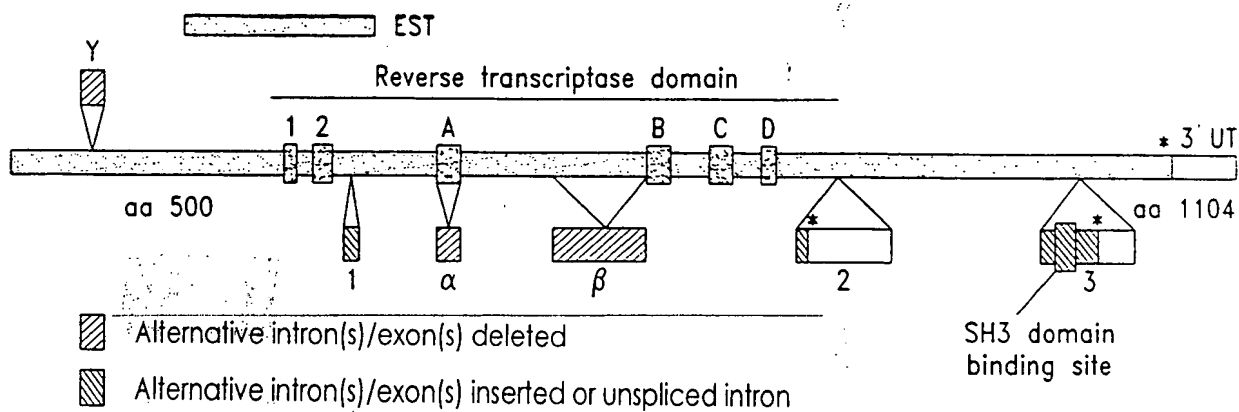


Fig. 7A

Variants:	1	α	β	2	3
RT-PCR product	NO	+	+	NO	+
PCR from LIM1215 lib.	-	+	-	+	& -
RT-PCR product	NO	-	+	NO	NO
53.2 cDNA	-	-	-	-	+
					NO

Fig. 7B



222
Y 5'-CCAGGTG|ggcctc

223
gcaggtg|TCCTGCC-3'

1950
1 5'-AAAGAGG|GTGGCTG.....AACAGAA|GCCGAGC-3'

2130
a 5'-TGCAAG|gtggatg.....ccccag|GACAGGC-3'

2286
b 5'-GAGCCAC|gtctcta.....ggggcaa|GTCCTAC-3'

2843
2 5'-ACTCCAG|GTGAGCG.....XXXXXX|CTATGCC-3'

3157
3 5'-AACGCAG|CCGAAGAAAACATTTCTGTCGTGACTCCTGCGGTGCTTGGGTCGGGACAGCCAGAGATGG
T A A E E N I L V V T P A V L G S G Q P E M E
AGCCACCCCGCAGACCGTCGGGTGTGGGCAGCTTTCCGGTGTCTCCTGGGAGGGGAGTTG
P P R R P S G V G S F P V S P G R G V G
3158
GGCTGGGCCTGTGACTCCTCAGCCTCTGTTTTCCCCCAG|GGATGTC-3'
L G L *

Fig. 7C

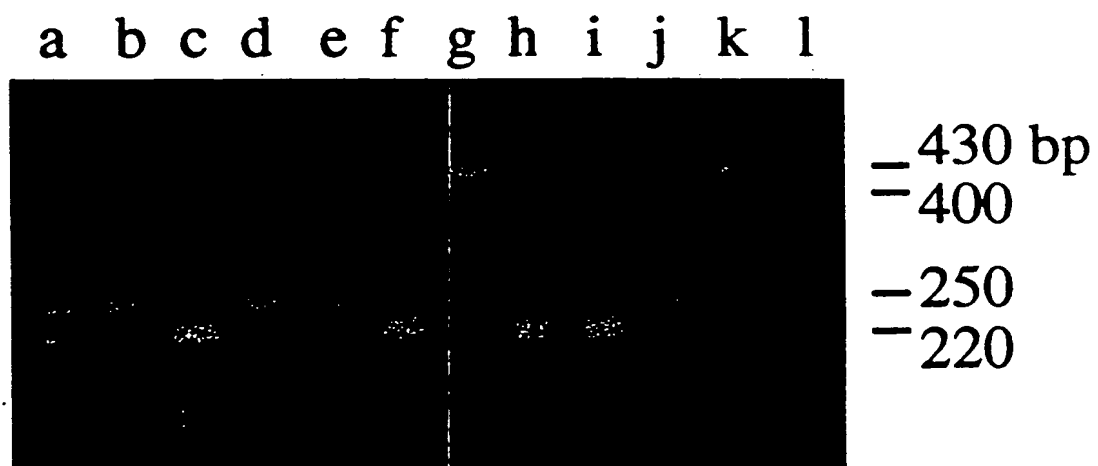


Fig. 8



GACGTGGAAGATGAGCGTGGGGACTGCGCTTGGCTGCGCAGGAGCCAGGGGTTGGCTGTGTTCCGGCCGAGAGCACCGTCTGCGTGAGGAGATCTGGCCAAGTTCCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTGTACGTCGTCAGGCTGCTCAGGTCTTTCTTTATGTACGGAGACCAGTTCAAAAGAACAGGCTCTTTTCTACCGGAAGAGTGTCTGGAGCAAGTTGCAAAGCATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
AATCAGACAGCACTTGAAGAGGGTGACGTGCGGGAGCTGTCGGAAGCAGAGGTACGGCAGCATCGGAAGCAGGCCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCCAAGCCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
CGGGCTGCGGCCGATTGTGAACATGGACTACGTCGTGGGAGCCAGAACGTTCCGCAGAGAAAAGAGGCCGAGCGTCTCACCTCGAGGGTGAAGGCACTGTTACGCGTCTCAACTACGA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
GCGGGCGCGGCCCGGCCCTCCTGGGCGCCTGTGTGCTGGGCTGGACGATATCCAGGGGCTGGCGCACCTTCGTGCTGCGTGTGCGGGCCAGGACCCGCGCCTGAGTGTACTT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F
TGTCAAGGTGGATGTACGGGCGGTACGACACCATCCCCAGGACAGGCTCACGGAGGTATCGCCAGCATCATAAACCCAGAACACGTACTGCGTGCCTCGGTATGCCGTGGTCCA
V K V D V T G A Y D T I P Q D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q
GAAGGCCGCCATGGGCACGTCCGCAAGGCCCTCAAGAGCCAC
K A A H G H V R K A F K S H

GTCTACGTCCAGTG

V L R P V

CCAGGGGATCCCGAGGGCTCCATCCTCTCCACGCTGCTCTGACGCTGTGCTACGGCGACATGGAGAACAGCTGTTTCGGGGATTGCGGGGACGGGCTGCTCCTGCGTTTGGTGG
P G D P A G L H P L H A A L Q P V L R R H G E Q A V C G D S A G R A A P A F G G
TGATTTCTGTTGGTGACACCTCACCTCACCCAGCGAAAACCTTCTCAGGACCTGGTCCGAGGTGTCCTGAGTATGGCTGCGTGGTGAAC TTGCGGAAGACAGTGGTGAAC TCCC

*

Fig. 11AA



Reference protein (ver. 2)

ATGCCGCGCTCCCCGCTGCCGAGCCGTGCGCTCCCTGCTGCGCAGCCACTACCGCGAG 60
MetProArgAlaProArgCysArgAlaValArgSerLeuLeuArgSerHisTyrArgGlu 20

GTGCTGCCGCTGGCCACGTTCTGCGGCGCCTGGGGCCCCAGGGCTGGCGGCTGGTGCAG 120
ValLeuProLeuAlaThrPheValArgArgLeuGlyProGlnGlyTrpArgLeuValGln 40

CGCGGGGACCCGGCGGCTTTCCGCGCGCTGGTGGCCCAGTGCCTGGTGTGCGTGCCCTGG 180
ArgGlyAspProAlaAlaPheArgAlaLeuValAlaGlnCysLeuValCysValProTrp 60

GACGCACGGCCGCCCCCGCCGCCCCCTCCTTCCGCCAGGTG
AspAlaArgProProProAlaAlaProSerPheArgGlnVal

GGCCTCCCCGGGGTCGGCGTCCGGCTGGGGTTGAGGGCGGCCGGGGGAACCAGCGACATGCGGAG
G L P G V G V R L G L R A A G G N Q R H A E
A S P G S A S G W G * G R P G G T S D M R R
P P R G R R P A G V E G G R G E P A T C G E

AGCAGCGCAGGCGACTCAGGGCGCTTCCCCCGCAGGTG
S S A G D S G R F P R R
A A Q A T Q G A S P A G
Q R R R L R A L P P Q V

TCCTGCCTGAAGGAGCTG 240
SerCysLeuLysGluLeu 80

GTGGCCCGAGTGCTGCAGAGGCTGTGCGAGCGCGGCGGAAGAACGTGCTGGCCTTCGGC 300
ValAlaArgValLeuGlnArgLeuCysGluArgGlyAlaLysAsnValLeuAlaPheGly 100

TTGCGCTGCTGGACGGGGCCCCGCGGGGGCCCCCGAGGCCTTACCACCAGCGTGCGC 360
PheAlaLeuLeuAspGlyAlaArgGlyGlyProProGluAlaPheThrThrSerValArg 120

AGCTACCTGCCCCAACACGGTGACCGACGCACTGCGGGGAGCGGGGCGTGGGGGCTGCTG 420
SerTyrLeuProAsnThrValThrAspAlaLeuArgGlySerGlyAlaTrpGlyLeuLeu 140

TTGCGCCGCTGGGCGACGACGTGCTGGTTACCTGCTGGCACGCTGCGCGCTCTTTGTG 480
LeuArgArgValGlyAspAspValLeuValHisLeuLeuAlaArgCysAlaLeuPheVal 160

CTGGTGGCTCCCAGCTGCGCCTACCAGGTGTGCGGGCCGCGCTGTACCAGCTCGGCGCT 540
LeuValAlaProSerCysAlaTyrGlnValCysGlyProProLeuTyrGlnLeuGlyAla 180

GCCACTCAGGCCCCGCCCCGCCACACGCTAGTGGACCCCGAAGGCGTCTGGGATGCGAA 600
AlaThrGlnAlaArgProProProHisAlaSerGlyProArgArgArgLeuGlyCysGlu 200

Fig. 11AB

CGGGCCTGGAACCATAGCGTCAGGGAGGCCGGGGTCCCCCTGGGCCTGCCAGCCCCGGGT	660
ArgAlaTrpAsnHisSerValArgGluAlaGlyValProLeuGlyLeuProAlaProGly	220
GCGAGGAGGCGCGGGGGCAGTGCCAGCCGAAGTCTGCCGTTGCCAAGAGGCCCAGGCGT	720
AlaArgArgArgGlyGlySerAlaSerArgSerLeuProLeuProLysArgProArgArg	240
GGCGCTGCCCCTGAGCCGGAGCGGACGCCCGTTGGGCAGGGGTCTGGGCCACCCGGGC	780
GlyAlaAlaProGluProGluArgThrProValGlyGlnGlySerTrpAlaHisProGly	260
AGGACGCGTGGACCGAGTGACCGTGGTTTCTGTGTGGTGTACCTGCCAGACCCGCCGAA	840
ArgThrArgGlyProSerAspArgGlyPheCysValValSerProAlaArgProAlaGlu	280
GAAGCCACCTCTTTGGAGGGTGCGCTCTCTGGCACGCGCCACTCCCACCCATCCGTGGGC	900
GluAlaThrSerLeuGluGlyAlaLeuSerGlyThrArgHisSerHisProSerValGly	300
CGCCAGCACACGCGGGCCCCCATCCACATCGCGGCCACCACGTCCCTGGGACACGCCT	960
ArgGlnHisHisAlaGlyProProSerThrSerArgProProArgProTrpAspThrPro	320
TGTCCCCCGGTGTACGCCGAGACCAAGCACTTCTCTACTCCTCAGGCGACAAGGAGCAG	1020
CysProProValTyrAlaGluThrLysHisPheLeuTyrSerSerGlyAspLysGluGln	340
CTGCGGCCCTCCTTCTACTCAGCTCTCTGAGGCCCAGCCTGACTGGCGCTCGGAGGCTC	1080
LeuArgProSerPheLeuLeuSerSerLeuArgProSerLeuThrGlyAlaArgArgLeu	360
GTGGAGACCATCTTTCTGGGTTCAGGCCCTGGATGCCAGGGACTCCCCGAGGTTGCCC	1140
ValGluThrIlePheLeuGlySerArgProTrpMetProGlyThrProArgArgLeuPro	380
CGCCTGCCCCAGCGCTACTGGCAAATGCGGCCCTGTTTCTGGAGCTGCTTGGGAACCAC	1200
ArgLeuProGlnArgTyrTrpGlnMetArgProLeuPheLeuGluLeuLeuGlyAsnHis	400
GCGCAGTGCCCCTACGGGGTGCTCCTCAAGACGCACTGCCCCTGCGAGCTGCGGTACCC	1260
AlaGlnCysProTyrGlyValLeuLeuLysThrHisCysProLeuArgAlaAlaValThr	420
CCAGCAGCCGGTGTCTGTGCCCGGGAGAAGCCCCAGGGCTCTGTGGCGGCCCCGAGGAG	1320
ProAlaAlaGlyValCysAlaArgGluLysProGlnGlySerValAlaAlaProGluGlu	440
GAGGACACAGACCCCGTCGCTGGTGCAGCTGCTCCGCCAGCACAGCAGCCCTGGCAG	1380
GluAspThrAspProArgArgLeuValGlnLeuLeuArgGlnHisSerSerProTrpGln	460
GTGTACGGCTTCGTGCGGGCCTGCCTGCGCCGGCTGGTGCCCCAGGCCTCTGGGGCTCC	1440
ValTyrGlyPheValArgAlaCysLeuArgArgLeuValProProGlyLeuTrpGlySer	480
AGGCACAACGAACGCCGCTTCTCAGGAACACCAAGAAGTTCATCTCCCTGGGGAAGCAT	1500
ArgHisAsnGluArgArgPheLeuArgAsnThrLysLysPheIleSerLeuGlyLysHis	500
GCCAAGCTCTCGCTGCAGGAGCTGACGTGGAAGATGAGCGTGCGGGGCTGCGCTTGGCTG	1560
AlaLysLeuSerLeuGlnGluLeuThrTrpLysMetSerValArgAspCysAlaTrpLeu	520



Fig. 11AC

CGCAGGAGCCCAGGGGTTGGCTGTGTTCCGGCCGCAGAGCACCGTCTGCGTGAGGAGATC	1620
ArgArgSerProGlyValGlyCysValProAlaAlaGluHisArgLeuArgGluGluIle	540
CTGGCCAAGTTCCTGCACTGGCTGATGAGTGTGTACGTCGTCGAGCTGCTCAGGTCTTTC	1680
LeuAlaLysPheLeuHisTrpLeuMetSerValTyrValValGluLeuLeuArgSerPhe	560
TTTTATGTCACGGAGACCACGTTTCAAAGAAGCAGGCTCTTTTCTACCGGAAGAGTGTC	1740
PheTyrValThrGluThrThrPheGlnLysAsnArgLeuPhePheTyrArgLysSerVal	580
TGGAGCAAGTTGCAAAGCATTGGAATCAGACAGCACTGAAGAGGGTGCAGCTGCGGGAG	1800
TrpSerLysLeuGlnSerIleGlyIleArgGlnHisLeuLysArgValGlnLeuArgGlu	600
CTGTCGGAAGCAGAGGTCAGGCAGCATCGGGAAGCCAGGCCCGCCCTGCTGACGTCCAGA	1860
LeuSerGluAlaGluValArgGlnHisArgGluAlaArgProAlaLeuLeuThrSerArg	620
CTCCGCTTCATCCCCAAGCCTGACGGGCTGCGGGCGATTGTGAACATGGACTACGTCGTG	1920
LeuArgPheIleProLysProAspGlyLeuArgProIleValAsnMetAspTyrValVal	640
GGAGCCAGAACGTTCCGCAGAGAAAAGAGGGCCGAGCGTCTCACCTCGAGGGTGAAGGCA	1980
GlyAlaArgThrPheArgArgGluLysArgAlaGluArgLeuThrSerArgValLysAla	660
CTGTTACAGCGTGCTCAACTACGAGCGGGCGCGGCCCGCCCTCCTGGGCGCCTCTGTG	2040
LeuPheSerValLeuAsnTyrGluArgAlaArgArgProGlyLeuLeuGlyAlaSerVal	680
CTGGGCCTGGACGATATCCACAGGGCCTGGCGCACCTTCGTGCTGCGTGTGCGGGCCCAG	2100
LeuGlyLeuAspAspIleHisArgAlaTrpArgThrPheValLeuArgValArgAlaGln	700
GACCCGCCGCCTGAGCTGTACTTTGTCAAGGTGGATGTGACGGGCGCGTACGACACCATC	2160
AspProProProGluLeuTyrPheValLysValAspValThrGlyAlaTyrAspThrIle	720
CCCCAGGACAGGCTCACGGAGGTCATCGCCAGCATCATCAACCCAGAACACGTACTGC	2220
ProGlnAspArgLeuThrGluValIleAlaSerIleIleLysProGlnAsnThrTyrCys	740
GTGCGTCGGTATGCCGTGGTCCAGAAGGCCGCCCATGGGCACGTCCGCAAGGCCTTCAAG	2280
ValArgArgTyrAlaValValGlnLysAlaAlaHisGlyHisValArgLysAlaPheLys	760
AGCCACGTCTCTACCTTGACAGACCTCCAGCCGTACATGCGACAGTTCGTGGCTCACCTG	2340
SerHisValSerThrLeuThrAspLeuGlnProTyrMetArgGlnPheValAlaHisLeu	780
CAGGAGACCAGCCCGCTGAGGGATGCCGTGTCATCGAGCAGAGCTCCTCCCTGAATGAG	2400
GlnGluThrSerProLeuArgAspAlaValValIleGluGlnSerSerSerLeuAsnGlu	800
GCCAGCAGTGGCCTCTTCGACGTCTTCTACGCTTCATGTGCCACCACGCCGTGCGCATC	2460
AlaSerSerGlyLeuPheAspValPheLeuArgPheMetCysHisHisAlaValArgIle	820
AGGGGCAAGTCTACGTCCAGTGCCAGGGGATCCCGCAGGGCTCCATCCTCTCCACGCTG	2520
ArgGlyLysSerTyrValGlnCysGlnGlyIleProGlnGlySerIleLeuSerThrLeu	840



Fig. 11AD



CTCTGCAGCCTGTGCTACGGCGACATGGAGAACAAGCTGTTTGCGGGGATTTCGGCGGGAC LeuCysSerLeuCysTyrGlyAspMetGluAsnLysLeuPheAlaGlyIleArgArgAsp	2580 860
GGGCTGCTCCTGCGTTTGGTGGATGATTTCTTGTTGGTGACACCTCACCTACCCACGCG GlyLeuLeuLeuArgLeuValAspAspPheLeuLeuValThrProHisLeuThrHisAla	2640 880
AAAACCTTCCTCAGGACCCTGGTCCGAGGTGTCCCTGAGTATGGCTGCGTGGTGAACCTG LysThrPheLeuArgThrLeuValArgGlyValProGluTyrGlyCysValValAsnLeu	2700 900
CGGAAGACAGTGGTGAACCTCCCTGTAGAAGACGAGGCCCTGGGTGGCACGGCTTTTGT ArgLysThrValValAsnPheProValGluAspGluAlaLeuGlyGlyThrAlaPheVal	2760 920
CAGATGCCGGCCACGGCCTATTCCCCTGGTGCGGCCTGCTGCTGGATACCCGGACCCTG GlnMetProAlaHisGlyLeuPheProTrpCysGlyLeuLeuLeuAspThrArgThrLeu	2820 940
GAGGTGCAGAGCGACTACTCCAGCTATGCCCCGACCTCCATCAGAGCCAGTCTCACCTTC GluValGlnSerAspTyrSerSerTyrAlaArgThrSerIleArgAlaSerLeuThrPhe	2880 960
AACCGCGGCTTCAAGGCTGGGAGGAACATGCGTCGCAAACTCTTTGGGGTCTTGCGGCTG AsnArgGlyPheLysAlaGlyArgAsnMetArgArgLysLeuPheGlyValLeuArgLeu	2940 980
AAGTGTCACAGCCTGTTTCTGGATTTGCAGGTGAACAGCCTCCAGACGGTGTGCACCAAC LysCysHisSerLeuPheLeuAspLeuGlnValAsnSerLeuGlnThrValCysThrAsn	3000 1000
ATCTACAAGATCCTCCTGCTGCAGGCGTACAGGTTTCACGCATGTGTGCTGCAGCTCCCA IleTyrLysIleLeuLeuLeuGlnAlaTyrArgPheHisAlaCysValLeuGlnLeuPro	3060 1020
TTTCATCAGCAAGTTTGAAGAACCCACATTTTTCTGCGCGTCATCTCTGACACGGCC PheHisGlnGlnValTrpLysAsnProThrPhePheLeuArgValIleSerAspThrAls	3120 1040
TCCCTCTGCTACTCCATCCTGAAAGCCAAGAACGCAGGGATGTCGCTGGGGGCCAAGGGC SerLeuCysTyrSerIleLeuLysAlaLysAsnAlaGlyMetSerLeuGlyAlaLysGly	3180 1060
GCCGCCGGCCCTCTGCCCTCCGAGGCCGTGCACTGGCTGTGCCACCAAGCATTCTGCTC AlaAlaGlyProLeuProSerGluAlaValGlnTrpLeuCysHisGlnAlaPheLeuLeu	3240 1080
AAGCTGACTCGACACCGTGTACCTACGTGCCACTCCTGGGGTCACTCAGGACAGCCCAG LysLeuThrArgHisArgValThrTyrValProLeuLeuGlySerLeuArgThrAlaGln	3300 1100
ACGCAGCTGAGTCGGAAGCTCCCGGGGACGACGCTGACTGCCCTGGAGGCCGAGCCAAC ThrGlnLeuSerArgLysLeuProGlyThrThrLeuThrAlaLeuGluAlaAlaAlaAsn	3360 1120
CCGGCACTGCCCTCAGACTTCAAGACCATCCTGGAC ProAlaLeuProSerAspPheLysThrIleLeuAsp	3420 1132

Fig. 11AE



Truncated protein 3 (ver. 2)

ATGCCGCGCTCCCCGCTGCCGAGCCGTGCGCTCCCTGCTGCGCAGCCACTACCGCAGGTGCTGCCGCTGGCCACGTTCTGT
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCTGGGGCCCCAGGGCTGGCGGCTGGTGCAGCGGGGACCCGGCGCTTTCCGCGCGCTGGTGGCCAGTGCCTGGTGTGCGTGCCCTGGGACGCACGGCCGCCCCCGCCG
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

GGCCTCCCCGGGTGCGGCTCCGGCTGGGGTTGAGGGCGGCGGGGGGAACAGCGACATGCGGAGAGCAGCGCAGGCGACTCAGGGCGCTTCCCCCGCAGGTG
G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G R F P R R
A S P G S A S G W G * G R P G G T S D M R R A A Q A T Q G A S P A G
P P R G R R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V

CCCCCTCTCCGCCAGGTGCTCTGCTGAAGGAGCTGGTGGCCGAGTCTGCAGAGGCTGTGCGAGCGCGGCGGAAGAACGTGCTGGCCTTCGGCTTCGCGCTGCTGGACGGGGCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCCGAGGCTTACCACAGCGTGCAGCTACCTGCCAACACGGTGACCGACGCACTGCGGGGAGCGGGCGTGGGGCTGCTGCTGCGCGCTGGGCGACGACGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGGTTACCTGCTGGCAGCTGCGCGCTCTTTGTGCTGGTGGCTCCAGCTGCGCCTACCAGGTGTGCGGGCGCGCTGTACCAGCTCGGCGCTGCCACTCAGGCCCGGGCCCCCGC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACACGCTAGTGACCCGAAGCGCTCTGGATGCGAACGGGCTGGAACATAGCGTCAGGAGGGCGGGGCTCCCCCTGGGCTGCCAGCCCGGGTGGAGGAGCGGGGGCAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCGAAGTCTGCGTTGCCAAGAGGCCAGGCGTGGCGCTGCCCTGAGCGGAGCGGACCGCGTTGGGCAAGGCTCTGGGCCACCCGGGACGAGCGTGACCGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGTTTTCTGTGGTGTACCTGCCAGACCCGCCGAAGGCCACCTCTTTGGAGGGTGCCTCTCTGCGACGCGCCACTCCACCCATCCGTGGGCGCCAGCACCAGCGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGCGGCCACCAGTCCCTGGGACAGCCTTGTCCCCGGGTGACGCGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGCTGCGGCCCTCCTTCTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

CTCTGAGGGCCAGCCTGACTGGCGCTCGGAGGCTCGTGGAGACCATTCTTGGGTTCCAGGCCCTGGATGCCAGGACTCCCCGAGGTTGCCCCGCTGCCACGCTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATCGGCCCCGTGTTCTGGAGCTGCTTGGGAACACGCGAGTGCCCTACGGGGTCTCTCAAGACGCACTGCCGCTGCGAGCTCGGGTACCCAGCAGCGGTGCTGTGCCCC
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

GGAGAAGCCCCAGGCTCTGTGGCGGCCCCGAGGAGGAGACAGACCCCGTGGCTGGTGCAGCTGCTCCGCCAGCAGCAGCCCTGGCAGGTGTACGGCTTCGTGCGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTGGCCCCAGGCTCTGGGGCTCCAGGCACAACGAGCGCTTCTCAGGAACACCAAGAAGTTATCTCCTGGGGAAGCATGCCAAGCTCTCGTGCAGGAGT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

Fig. 11AF



GACGTGGAAGATGAGCGTGGGGACTGCGCTTGGCTGCGCAGGAGCCAGGGGTGGCTGTGTTCCGGCCGAGAGCACCCTGCGTGAGGAGATCCTGGCCAAGTTCCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L

GATGAGTGTGTACGTCGTGAGCTGCTCAGGCTTTTCTTTTATGTCACGGAGACCACGTTTCAAAGAAGAGGCTCTTTTCTACCGAAGAGTGTCTGGAGCAAGTTCAAAGCATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G

AATCAGACAGCACTTGAAGAGGGTGACGTGCGGGAGCTGTGGAAGCAGAGGTGAGCAGCATCGGAAGCCAGGCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCAAGCCTGA
I R O H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D

CGGGCTGCGGCCGATTGTGAACATGGAAGTACGTCGTGGGAGCCAGAAGCTTCGAGAGAAAAGGGCCGAGCGTCTCACCTCGAGGGTGAAGGCACTGTTGAGCGTCTCAACTAGGA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E

GC GG GCGGGGCCCCGGCTCTGGGGCTGTGCTGGGCTGGACATACACAGGGCTGGGCGACCTTCGTGCTGCGTGTGCGGGCCAGGACCCGCGCTGAGCTGTACT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F

TGTCAGGTGGATGTGACGGGCGGTACGACACCATCCCCAGGACAGGCTACGGAGGTATCGCCAGCATCAAAACCCAGAACAGTACTGCGTGGCTGGTATGCCGTGGTCCA
V K V D V T G A Y D T I P Q D R L T E V I A S I K P Q N T Y C V R R Y A V V Q

GAAGGCGGCCATGGGCAGCTCCGCAAGGCTTCAAGAGCCAGCTCTACCTTGACAGACCTCCAGCGTACATGCGACAGTTCGTGGCTCACCTGCAGGAGACCAGCCCGCTGAGGGA
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D

TGCCGTCGTATCGAGCAGAGCTCCTCCCTGAATGAGGCCAGCAGTGGCTCTTCGACGTCTTCTACGCTTCATGTGCCACCAGCCGTGCGCATCAGGGCAAGTCTACGTCCAGTG
A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C

CCAGGGGATCCCGAGGGCTCCATCCTCTCCACGCTGCTCTGCAGCCTGTGCTACGGCGACATGGAGAACAAGCTGTTTGGGGGATTGCGGGGACGGGCTGCTCTGCGTTTGGTGA
Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R O G L L L R L V D

TGATTTCTTGTGGTGACCTCACCTCACCCAGCGAAACCTTCTCAGGACCTGGTCCGAGGTGTCCCTGAGTATGGCTGCGTGGTGAACCTTGGGAAGACAGTGGTGAACCTCCC
D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P

TGTAGAAGACGAGGCCCTGGGTGGCAGGCTTTTGTTCAGATGCCGGCCACGGCTATTCCCTGGTGGGCTGCTGCTGGATACCCGGACCTGGAGGTGCAGAGCGACTACTCCAG
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S R

GTGAGCGCACCTGGCCGGAAGTGAGCCTGTGCCGGCTGGGGCAGGTGCTGCTGACGGGCCGTTGCGTCCACCTCTGCTTCCGTGTGGGGCAGGCACTGCCAATCCCAAGGGTCAGA
*

TGCCACAGGGTGCCCTCGTCCATCTGGGGCTGAGCACAAATGCATCTTTCTGTGGAGTGAGGGTGCTCACAACGGGAGCAGTTTTCTGTGCTATTTTGGTAA....

Fig. 11AG

Altered C-terminus protein (ver. 2)

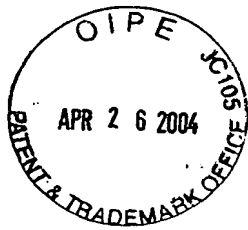


GACGTGGAAGATGAGCGTGGGACTGCGCTTGGCTGCCAGGAGCCAGGGGTGGCTGTGTTCGGCCGAGAGCACCCTGCGTGAGGAGATCTGGCCAAGTTCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTGACGTCGTCGAGCTGCTCAGGTCTTTCTTTATGTACGGAGACCACGTTTCAAAGAACAGGCTCTTTTCTACCGGAAGAGTGTCTGGAGCAAGTTGCAAAGCATTG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
AATCAGACAGCACTTGAAGAGGGTGCAGCTGCGGGAGCTGTGGAAGCAGAGGTACGGCAGCATCGGGAAGCCAGGCCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCAAGCCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
CGGGCTGCGGCGATTGTGAACATGGACTACGTCGTGGGAGCCAGAAGTTCGCGAGAGAAAAGAGGGCCGAGCGTCTCACCTCGAGGGTGAAGGCACTGTTACGCGTGTCAACTAGA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
GCGGGCGCGGCGCCCGGCTCTGGGCGCTCTGTGCTGGGCTGGACGATATCCAGAGGCTGGGCGACCTTCGTGCTGCGTGTGCGGGCCAGGACCCGCGCTGAGCTGTACTT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F
TGTAAGGTGGATGTGACGGGCGGTACGACACCATCCCCAGGACAGGCTCACGGAGGTATCGCCAGCATCATAAACCCAGAACAGTACTGCGTGGTGGTATGCCGTGGTCCA
V K V D V T G A Y D T I P Q D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q
GAAGGCCGCCATGGGCACTCCGAAGGCTTCAAGAGCCAGCTCTACCTTGACAGACCTCCAGCGGTACATGCCAGTTCGTGGCTCACCTGAGGAGACAGCCCGCTGAGGGA
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D
TGGCTGTCATCGAGCAGAGCTCCTCCTGAATGAGGCCAGCAGTGGCTCTTCGACGTCTTCTACGTTTCATGTGCCACCAGCCGTGCCATCAGGGGCAAGTCTACGTCCAGTG
A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C
CCAGGGGATCCCGCAGGGCTCCATCCTCTCAGCGTGTCTGACGCTGTGCTACGGCGACATGGAGAACAAGCTGTTTGGGGGATTGCGGGGACGGGCTGCTCCTGCGTTTGGTGA
Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R L V D
TGATTTCTTGTGGTGACACCTCACCTCACCCAGCGAAAACCTTCTCAGGACCTGGTCCGAGGTGTCCCTGAGTATGGCTGCGTGGTGAAGTTCGGAAGACAGTGGTGAAGTCCC
D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P
TGTAAGACGAGGCGCTGGGTGGCAGGCTTTTGTTCAGATGCCGGCCACGGCTATTCCCTGGTGGGCGCTGCTGCTGGATACCGGACCTGGAGGTGCAGAGCAGTACTCCAG
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S S
CTATGCCCGACCTCCATCAGAGCCAGTCTCACCTTCAACCGCGGCTTCAAGGCTGGGAGGAACATGCGTCGCAAACTCTTTGGGGTCTTGGCGGTGAAGTGTACAGCCTGTTTCTGGA
Y A R T S I R A S L T F N R G F K A G R N M R R K L F G V L R L K C H S L F L D
TTTGCAGGTGAACAGCCTCAGACGGTGTGCACCAACATCTAAGATCCTCCTGCTGCAGGGCTACAGGTTTACGCATGTGTGCTGCAGCTCCATTTTCATCAGCAAGTTTGAAGAA
L Q V N S L Q T V C T N I Y K I L L L Q A Y R F H A C V L Q L P F H Q Q V W K N
CCCCACATTTTCTGCGCGTCTCTGTGACAGGCTCCTCTGCTACTCCATCCTGAAAGCCAGAACGAGGGATGTGCTGGGGGCCAAGGGCGCCGCGGCTCTGCCCTCCGA
P T F F L R V I S D T A S L C Y S I L K A K N A E

CCGAAGAAAACATTTCTGCTGCTGACTCCTGCGGTGCTTGGGTC
E E N I L V V T P A V L G S

GGGACAGCCAGAGATGGAGCCACCCCGCAGACCGTGGGTGTGGGAGCTTTCCGGTGTCTCTGGGAGGGAGTTGGGCTGGGCTGTGACTCCTCAGCCTCTGTTTCCCCCAG
G Q P E M E P P R R P S G V G S F P V S P G R G V G L G L *

Fig. 11AI



Protein that lacks motif A (ver. 2)

ATGCCGCGCGCTCCCGCTGCCGAGCCGTGCGCTCCCTGCTGCGCAGCCACTACCGCAGGTGCTGCCGTGCCACGTTCCGT
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCTGGGGCCCCAGGGCTGGCGCTGGTGCAGCGGGGACCCGGCGCTTTCGCGCGCTGGTGGCCAGTGCTGGTGTGCGTGCCCTGGGACGACGGCCGCCCGCCCGC
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

GGCCTCCCGGGGTGCGCTCCGGCTGGGGTTGAGGGCGCCGGGGGAACAGCGACATGCGGAGAGCAGCGCAGGCGACTCAGGGCGCTTCCCCCGAGGTG
G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G R F P R R
A S P G S A S G W G * G R P G G T S D M R R A A Q A T Q G A S P A G
P P R G R R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V

CCCCCTCTCCGCCAGGTGCTCTGCTGAAGGAGCTGGTGGCCGAGTGCTGCAGAGCTGTGCGAGCGCGCGCGAAGAACGTGCTGGCTTCGGCTTCGCGCTGCTGGACGGGGCCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCCGAGGCTTACCACAGCGTGCGCAGCTACCTGCCAACACGGTGACCGCAGCTGCGGGGAGCGGGGCGTGGGGGCTGCTGCTGCCGCGTGGGCGACGACGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGGTTACCTGCTGGCAGCTGCGCGCTCTTGTGCTGGTGGCTCCAGCTGCGCCTACAGGTGTGCGGGCGCGCTGTACCAGCTGCGGCTGCCACTCAGGCCCGGGCCCCCGC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACACGCTAGTGGACCCGAAGCGCTCTGGGATGCGAACGGGCTGGAACCATAGCTCAGGGAGGCGGGGTCCCCCTGGGCTGCCAGCCCCGGTGCGAGGAGGCGCGGGGCGAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCCGAAGTCTGCCGTTGCCAAGAGGCCAGGCGTGGCGCTGCCCTGAGCCGGAGCGGACGCCGTTGGGAGGGGTCTGGGCCACCCGGGCGAGGACGCTGGACCGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGGTTTCTGTGGTGTACCTGCCAGACCCGCCGAAGAAGCCACCTCTTTGAGGGGTGCGCTCTCTGGCAGCGCCACTCCACCCATCCGTGGGCGCGCAGCACCACGGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGCGCCACCAGTCCCTGGGACACGCTTGTCCCCGGTGACCGGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGTGCGGCCCTCTTCTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

CTCTCTGAGGCCAGCCTGACTGGCGCTCGGAGGCTCGTGAGACCATCTTTCTGGTTCCAGGCCCTGGATGCCAGGGACTCCCCGAGGTTGCCCGCCTGCCCGAGCGCTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATGCGGGCCCTGTTTCTGAGAGTGTGGGAACACGCGCAGTGCCCTACGGGGTGTCTCAAGACGCACTGCCGCTGCGAGCTGCGGTACCCCAGCAGCGGTGTCTGTGCCCG
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

GGAGAAGCCCCAGGCTCTGTGGCGGCCCGAGGAGGAGACAGACCCCGTGGCTGGTGCAGCTGCTCCGCGACACAGCAGCCCTGGCAGGTGTACGGCTTCTGTGGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTGGCCCGAGGCTCTGGGGCTCCAGGCACAACGAACGCGCTTCTCAGGAACACCAAGATTCTCTCTGGGGAAGCATGCCAAGCTCTCGTGCAGGAGT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

Fig. 11AJ



GACGTGGAAGATGAGCTGCGGGACTGCGCTTGGCTGCGCAGGAGCCAGGGGTTGGCTGTGTTCCGGCCGAGAGCACCCTGCGTGAGGAGATCCTGGCCAAGTTCCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTGTACGTCGTCGAGCTGCTCAGGTCTTTCTTTATGTACGAGAGACCAGTTTCAAAAGAACAGGCTCTTTTCTACCGAAGAGTGTCTGGAGCAAGTTGCAAAGCATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
AATCAGACAGCACTTGAAGAGGGTGCAGCTGCGGGAGCTGTCGGAAGCAGAGGTGAGCAGCATCGGAAGCAGGCCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCCAAGCCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
CGGGCTGCGGCCGATTGTGAACATGGACTACGTCGTGGAGCCAGAACGTTCCGAGAGAAAAGAGGGCCGAGCGTCTCACCTCGAGGGTGAAGGCACTGTTGAGCGTGTCAACTACGA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
GCGGGCGGGCGCCCGGCTCTGGGCGCTCTGTGCTGGGCTGGACGATATCCAGAGGCTGGCGCACCTTCGTGCTGCTGTGCGGGCCAGGACCCCGCCCTGAGCTGTACTT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F
TGCAAG
V K
GACAGGCTCAGGAGTTCATGCCAGCATCATAAACCCAGAACAGTACTGCGTGGTGGTATGCCGTGGTCCA
D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q
GAAGCCGCCCATGGGACGTCGCAAGGCTTCAAGAGCCAGTCTCTACCTTGACAGACCTCCAGCCGTACATGCGACAGTTCGTGGCTCACCTGCAGGAGACCAGCCCGCTGAGGGA
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D
TGCCGTGTCATCAGCAGAGCTCCTCCCTGAATGAGGCCAGTGGCCTCTTCGACGCTTCTCTACGCTTCATGTGCCACCACGCCGTGGCATCAGGGCAAGCTCTACGTCCAGTG
A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C
CCAGGGATCCCGAGGGCTCCATCCTCTCCAGCTGCTCTGCAGCCTGTGCTACGGCAGATGGAGAACAAGCTGTTTCCGGGGATTCCGGGGACGGGCTGCTCCTGCGTTTGGTGGA
Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R L V D
TGATTTCTTGTGGTGACACCTCACCTCACCCACGGAAACCTTCTCAGGACCTGGTCCGAGGTGCTCCTGAGTATGGCTGCGTGGTGAACCTGCGGAAGACAGTGGTGAACCTCCC
D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P
TGTAAGACGAGGCCCTGGGTGGCAGGCTTTTGTTCAGATGCCGGCCACGGCTATTCCCTGGTGGGCTGCTGCTGGATACCCGACCTGGAGGTGCAGAGCGACTACTCCAG
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S S
CTATGCCCGACCTCCATCAGAGCAGTCTCACCTTCAACCGCGGCTTCAAGGCTGGGAGGAACATGCGTCGCAAACTCTTTGGGGTCTTGGCGGTGAAGTGTACAGCCTGTTTCTGGA
Y A R T S I R A S L T F N R G F K A G R N M R R K L F G V L R L K C H S L F L D
TTTGAGGTGAACAGCCTCAGAGCGGTGTGCACCAACATCTACAAGATCCTCTGCTGACAGCGTACAGGTTTACGCATGTGTGCTGCAGCTCCCATTTTCATCAGCAAGTTTGAAGAA
L Q V N S L Q T V C T N I Y K I L L L Q A Y R F H A C V L Q L P F H Q Q V W K N
CCCCATTTTTCTGCGGTATCTCTGACAGGCTCCCTCTGCTACTCCATCCTGAAAGCCAAGAAGCAGGGATGTGCTGGGGCCCAAGGGCGCCCGGCCCTCTGCCCTCCGA
P T F F L R V I S D T A S L C Y S I L K A K N A G M S L G A K G A A G P L P S E
GGCCGTGAGTGGTGTGCCACCAAGCATTCTGCTCAAGCTGACTCGACACCGTGTACCTACGTGCCACTCTGGGGTCACTCAGGACAGCCAGACGAGCTGAGTCGGAAGCTCCC
A V Q W L C H Q A F L L K L T R H R V T Y V P L L G S L R T A Q T Q L S R K L P
GGGACGAGCTGACTGCCCTGGAGGCGCAGCCAACCCGGCACTGCCCTCAGACTTCAAGACCATCTGGACTGATGGCCACCCGCCACAGCCAGGCCGAGAGCAGACACCGAGCGC
G T T L T A L E A A A N P A L P S D F K T I L D

Fig. 11AK



CTGTCACGCCGGGCTCTACGTCCAGGGAGGGAGGGGGCCACACCCAGGCCCGCACCGCTGGGAGTCTGAGGCCTGAGTGAGTGTTGGCCGAGGCCTGCATGTCGGCTGAAGGCT
GAGTGTCGGCTGAGGCCTGAGCGAGTGTCAGCCAAGGGCTGAGTGTCAGCACACCTGCCGTCTTCACTTCCCCACAGGCTGGCGCTCGGCTCCACCCAGGGCCAGCTTTTCCTCAC
CAGGAGCCCGGCTTCCACTCCCCACATAGGAATAGTCCATCCCAGATTGCCATTGTTACCCCTCGCCCTGCCCTCCTTTGCCCTCCACCCCACTCCAGGTGGAGACCTGAGAA
GGACCCTGGGAGCTCTGGGAATTTGGAGTGACCAAAGGTGTGCCCTGTACAGGCGAGGACCTGCACCTGGATGGGGTCCCTGTGGGTCAAATTGGGGGAGGTGCTGTGGGAGTAA
AATACTGAATATATGAGTTTTTCAGTTTTGA

Fig. 11AL



Truncated protein that lacks motif A (ver. 2)

ATGCCGCGCGCTCCCCGCTGCCGAGCGTGGCGTCCCTGCTGCCGAGCACTACCGGAGGTGCTGCCGCTGGCCACGTTCTG
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCTGGGGCCCCAGGGCTGGCGGTGGTGCAGCGCGGGGACCCGGCGCTTTCGCGCGCTGGTGGCCAGTGCTGGTGTGCGTGGCTGGGACGCACGGCCCCCCCCCGCG
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

GGCCTCCCCGGGTGGCGTCCGGCTGGGGTTGAGGGCGCGGGGGGAACAGCGACATGCCGAGAGCAGCGAGGCACTAGGGCGCTTCCCCCGAGGTG
G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G R F P R R
A S P G S A S G W G * G R P G G T S D M R R A A Q A T Q G A S P A G
P P R G R R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V

CCCCCTCTCCGCCAGGTGCTGCTGAAGGAGTGGTGGCCGAGTGTGCAGAGCTGTGCCGAGCGCGCGAAGAAGTGTGGCTTCGGCTTCGCGCTGCTGGACGGGGCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCCGAGGCTTACCACAGCGTGGCAGTACCTGCCAACACGGTGACCGACCACTCGGGGGAGCGGGGCTGGGGGCTGCTGCTGCCGCGGTGGGCGACGACGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGGTTCACGTGCGCAGCTGCGCGCTTTTGTGCTGGTGGCTCCAGCTGGCGCTACAGGTGTGGGGCGCGGCTGTACCAGCTCGCGCTGCCACTCAGGCCCGGGCCCCCGC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACACGCTAGTGGACCCGAAGGCGTCTGGGATGCCAAGCGGCTGGAACCATAGCGTCAGGGAGCGGGGTCCCCCTGGGCTGCCAGCCCCGGTGGCAGGAGCGCGGGGCGAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCGAAGTCTGCCGTGCCAAGAGGCCAGGCGTGGCGTGGCCCTGAGCGGAGCGGACGCCGTTGGGCAGGGGTCTGGGCCACCCGGGAGGACGCGTGGACCGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGGTTTCTGTGTGTACCTGCCAGACCCGCCAAGAAGCCACCTTTTGGAGGGTGGCTCTTGGCACGCGCACTCCACCCATCCGTGGGCGCCAGCACCACGCGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGCGCCACCAGTCCCTGGGACAGCGCTTGTCCCCGGTGTACGCCGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGCTGCGGCCCTCCTTCTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

CTCTCTGAGGCCAGCCTGACTGGCGCTCGGAGGCTCGTGGAGACCATTTTCTGGGTTCAGGCCCTGGATGCCAGGGACTCCCCGAGGTTGCCCCGCTGCCCCAGCGCTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATGCGGCCCTGTTTCTGGAGCTGCTTGGGAACACGCGAGTGCCCTACGGGGTGTCTCAAGACGCACTGCCCGTGGAGCTGGGTACCCAGCAGCCGGTGTGTGCCCCG
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

GGAGAAGCCCCAGGCTCTGTGGCGGGCCCCGAGGAGGACACAGACCCCGTGGCTGGTGCAGTGTCTCGCCAGCAGCAGCCCTGGCAGGTGTACGGCTTCTGTGGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTCCCCAGGCTCTGGGGCTCAGGCACAACGAACCGCGCTTCTCAGGAACACCAAGAAGTTCATCTCCCTGGGAAGCATGCCAAGCTCTGCTGCAGGAGCT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

Fig. 11AM



GACGTGGAAGATGAGCGTGCAGGACTGCGCTTGGCTGCCAGGAGCCAGGGGTGGCTGTGTTCCGGCCGAGAGCACCGTCTGCGTGAGGAGATCCTGGCCAAGTTCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L

GATGAGTGTGTACGTGCTCGAGCTGCTCAGGTCTTTCTTTATGTACGGAGACCAGCTTTCAAAGAAGAGGCTCTTTTCTACCGGAAGAGTGTCTGGAGCAAGTTGCAAAGCATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G

AATCAGACAGCACTTGAAGAGGGTGCAGCTGCGGGAGCTGTGGAAGCAGAGGTGAGGCAGCATCGGAAGCCAGGCCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCCAAGCCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D

CGGCTGCGGCCGATTGTGAACATGGACTACGTGCTGGGAGCCAGAAGTTCCGAGAGAAAAGAGGCCGAGCGTCTCACCTCGAGGGTGAAGGCACTGTTGAGCGTGTCAACTACGA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E

GCGGGCGCGGCCCGCCCTCCTGGGCGCTCTGTGCTGGGCTGGAGATATCCAGGGCTGGCGCACCTTCGTGCTGCGTGTGCGGGCCAGGACCCGCCCTGAGCTGTACTT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F

TGCAAG
V K

GACAGGCTCACGGAGTGCATGCCAGCATCATAAACCCAGAACACGTAAGTGTGCGTGTGCGTGTGCGGGCCAGGACCCGCCCTGAGCTGTACTT
D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q

GAAGGCCGCCATGGGCACGTCCGCAAGGCTTCAAGAGCCAGCTCTACCTTGACAGACCTCCAGCCGTACATGCGACAGTTCGTGGCTCACCTGCAGGAGACCAGGCCGCTGAGGGA
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D

TGCGTGTGTCATCGAGCAGAGCTCCTCCTGAATGAGGCCAGTGGCCTCTTCGAGCTTCTCTACGTTCTATGTGCCACCAGCCGTGCGCATCAGGGCAAGTCTACGTCCAGTG
A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C

CCAGGGGATCCCGCAGGGCTCCATCCTCTCCAGCTGCTCTGAGCCTGTGCTACGGCAGATGGAGAACAAGCTGTTTCCGGGGATTCCGGGGGACGGGCTGCTCCTGCGTTTGGTGGA
Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R L V D

TGATTCTTGTGGTGACACCTCACCTCACCCACGGAAAACCTTCTCAGGACCTGGTCCGAGGTGCTCCCTGAGTATGGCTGCGTGGTGAAGTTCGGAAGACAGTGGTGAAGTCCCTCC
D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P

TGTAGAAGACGAGGCCCTGGGTGGCAGGCTTTTGTTCAGATGCCGGCCACGGCTATTCCCTGGTGGGCTGCTGCTGGATACCCGACCTGGAGGTGCAGAGCGACTACTCCAG
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S R

GTGAGCGCACCTGGCCGGAAGTGGAGCTGTGCCGGCTGGGGCAGGTGCTGCTGACGGGCCGTTGCGTCCACCTCTGCTTCCGTGTGGGGCAGGCGACTGCCAATCCCAAGGGTCAGA
*

TGCCACAGGGTGCCCTCGTCCCATCTGGGGCTGAGCACAAATGCATCTTTCTGAGGAGTGAAGGTGCTCACAACGGGAGCAGTTTTCTGTGCTATTTTGGTAA.....

Fig. 11AN



Lacks motif A and altered C-terminus (ver. 2)

ATGCCGCGGCTCCCCGCTGCCGAGCGTGCGCTCCCTGCTGCGCAGCCACTACCGCAGGTGCTGCCGTGGCCAGTTCGTG
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCTGGGGCCCCAGGGCTGGCGGCTGGTGCAGCGGGGACCCGGCGCTTTCCGCGGCTGGTGGCCAGTGCCTGGTGTGCGTGCCTGGGACGCACGGCGCCCCCGCGC
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

GGCCTCCCCGGGGTGGCGCTCCGGCTGGGGTTGAGGGCGGCGGGGGGAACAGCGACATGCGGAGAGCAGCGCAGGCGACTCAGGGCGCTTCCCCCGAGGTG
G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G R F P R R
A S P G S A S G W G * G R P G G T S D M R R A A Q A T Q G A S P A G
P P R G R R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V

CCCCCTTCCGCCAGGTGCTGCTGAAGGAGCTGGTGGCCGAGTGTGCAGAGGCTGTGCGAGCGGGCGCAAGAACGTGCTGGCCTTCGGCTTCGCGCTGCTGGACGGGGCCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCCGAGGCTTACCACAGCGTGGCGAGTACCTGCCCAACAGGTGACCGACGCACTGCGGGGAGCGGGGCTGGGGGCTGCTGCTGCCCGCGTGGGCGACGAGCT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGGTTACCTGCTGGCAGCTGCGCGCTTTTGTGCTGGTGGCTCCAGCTGCGCTACAGGTGTGCGGGCGCGGCTGTACCAGCTGCGGCTGCCACTCAGGCCGGGCCCCCGC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACACGCTAGTGACCCCGAAGCGCTCTGGGATGCGAAGCGGCTGGAACCATAGCGTCAGGAGGCGGGGCTCCCCCTGGGCTGCCAGCCCCGGTGCGAGGAGGCGGGGGCAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCGAAGTCTGCCGTTGCCAAGAGGCGCAGGCGTGGCGCTGCCCTGAGCGGAGCGGACCGCGTTGGGCAAGGGTCTGGGCCCCACCGGGCAGGACGCTGGACCGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGGTTTCTGTGGTGTACCTGCCAGACCGCGGAAGGCCACCTTTTGGAGGGTGGCTCTCTGGCAGCGCCACTCCACCCATCCGTGGGCGCCAGCACCAGCGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGGGCCACCAGTCCCTGGGACAGCCTTGTCCCCGGGTACGCGGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGCTGCGGCGCTCTCTACTACTAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

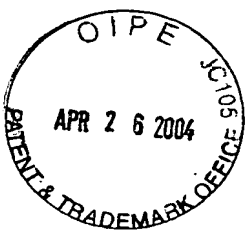
CTCTCTGAGGCCCAGCCTGACTGGCGCTCGGAGGCTCGTGGAGACCATTTTCTGGGTTCCAGGCCCCTGGATGCCAGGGACTCCCCGAGGTTGCCCCGCTGCCCGAGGCTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATGCGGCCCCGTTTCTGGAGCTGCTTGGGAACACGCGCAGTGCCCCACGGGGTGTCTCTCAAGACGCACTGCCGCTGCGAGCTGCGGTACCCAGCAGCGGGTGTGTGCCCCG
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

GGAGAAGCCCCAGGGCTGTGTGGCGGCCCCGAGGAGGAGACAGACCCCCGCTGCGCTGGTGCAGTGTCTCGCCAGCAGCAGCCCCGAGGTTACGGCTTCTGTGCGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTCCCCAGGCTCTGGGGCTCAGGACAAACGCGCTTCTCAGGAACCAAGAAGTTCATCTCCTGGGGAAGCATGCCAAGCTCTGCTGCAGGAGCT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

Fig. 11AO



GACGTGGAAGATGAGCGTGGGGACTGCGCTTGGCTGCCAGGAGCCAGGGGTGGCTGTGTTCGGCCGAGAGCACCGTCTGCGTGAGGAGATCTGGCCAAGTTCCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTGTACGTGCTGAGGCTGCTCAGGTCTTTCTTTATGTACGGAGACCAGCTTTCAAAGAACAGGCTCTTTTCTACCGGAAGAGTGTCTGGAGCAAGTTCAGAAAGCATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
AATCAGACAGCACTTGAAGAGGGTGCAGCTGCGGGAGCTGTGGAAGCAGAGGTGAGGAGCATCGGGAAGCCAGGCCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCCAAGCCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
CGGGCTGCGGCCGATTGTGAACATGGACTACGTGCTGGGAGCCAGAACGTTCCGAGAGAAAAGAGGGCCGAGCGTCTCACCTCGAGGGTGAAGGCACTGTTACGCGTCTCAACTACGA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
GCGGGCGGGCGCCCGGCTCTCTGGGCGCTCTGTGCTGGGCTGGAGATATCCAGAGGCTGGCGCACCTTCGTGCTGCGTGTGCGGGCCAGGACCCGCGCTGAGCTGTACTT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F
TGTCAGG
V K
GACAGGCTCACGAGGTCATCGCCAGCATCATAAACCCAGAACACGTAAGTGGTGGTGGTATGCGGTGGTCCA
D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q
GAAGCCCGCCATGGGCAGCTCCGAAGGCTTCAAGAGCCAGCTCTACCTTGACAGACCTCCAGCCGTACATGCGACAGTTCGTGGCTCACCTGCAGGAGACCAGCCCGCTGAGGGA
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D
TGCCGTGCTCATCGAGCAGAGCTCCTCCCTGAATGAGGCCAGCAGTGGCTCTTCGAGCTTCTCTACGCTTCATGTGCCACCAGCCGTGCGCATCAGGGCAAGCTTACGTCCAGTG
A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C
CCAGGGGATCCCGAGGGCTCCATCCTCTCCAGCTGCTCTGCAGCTGTGCTACGGCAGATGGAGAACAAGCTGTTTGGGGGATTGCGGGGAGGGGCTGCTCCTGCGTTTGGTGA
Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R L V D
TGATTTCTTGTGGTGACACCTCACCTCACCCAGCGAAAACCTTCTCAGGACCTGGTCCGAGGTGCTCCCTGAGTATGGCTGCGTGGTGAAGTTCGGAAGACAGTGGTGAAGTCCCTCC
D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P
TGTAAGACAGAGGCGCTGGGTGGCAGGCTTTTGTTCAGATGCCGGCCACGGCTATTCCCTGGTGGGCGCTGCTGCTGATACCCGGACCTGGAGGTGCAGAGGCACTACTCCAG
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S S
CTATGCCCGACCTCCATCAGAGCAGTCTCACCTTCAACCGCGGCTTCAAGGCTGGGAGGAACATGCGTCGCAAACTCTTTGGGGTCTTGGCGTGAAGTGTACAGGCTGTTTCTGGA
Y A R T S I R A S L T F N R G F K A G R N M R R K L F G V L R L K C H S L F L D
TTTGAGGTGAACAGCCTCCAGAGGTTGCACCAACATCTACAAGATCTCTGCTGAGGCGTACAGGTTTCACGCATGTGTGCTGAGCTCCCATTTTCATCAGCAAGTTTGAAGAA
L Q V N S L Q T V C T N I Y K I L L L Q A Y R F H A C V L Q L P F H Q Q V W K N
CCCCACATTTTCTGCGGTATCTCTGACAGGCTCCCTCTGCTACTCCATCTGAAAGCCAAGAAGCAGGATGTGCTGGGGCCAGGGGCGCGCGGCTCTGCCCTCCGA
P T F F L R V I S D T A S L C Y S I L K A K N A E
|
CCGAAGAAAACATTTCTGTGCTGACTCTGCGGTGCTTGGGTC
E E N I L V V T P A V L G S
GGGACAGCCAGAGATGGAGCCACCCGAGACCGTGGGTGTGGGAGCTTTCCGGTGTCTCTGGGAGGGGAGTTGGGCTGGGCTGTGACTCCTCAGCCTCTGTTTTCCCCAG
G Q P E M E P P R R P S G V G S F P V S P G R G V G L G L *

Fig. 11AP

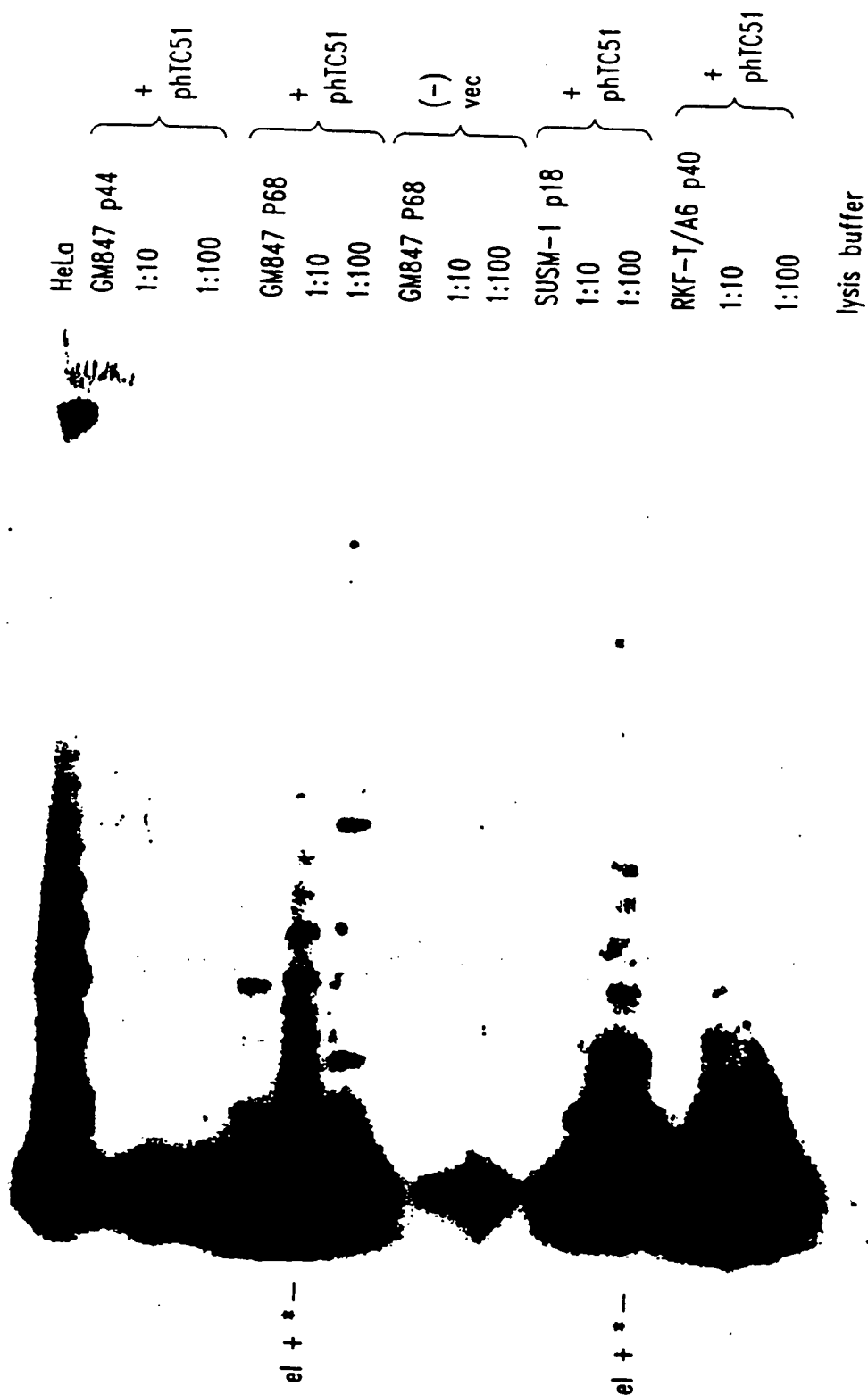


Fig. 12

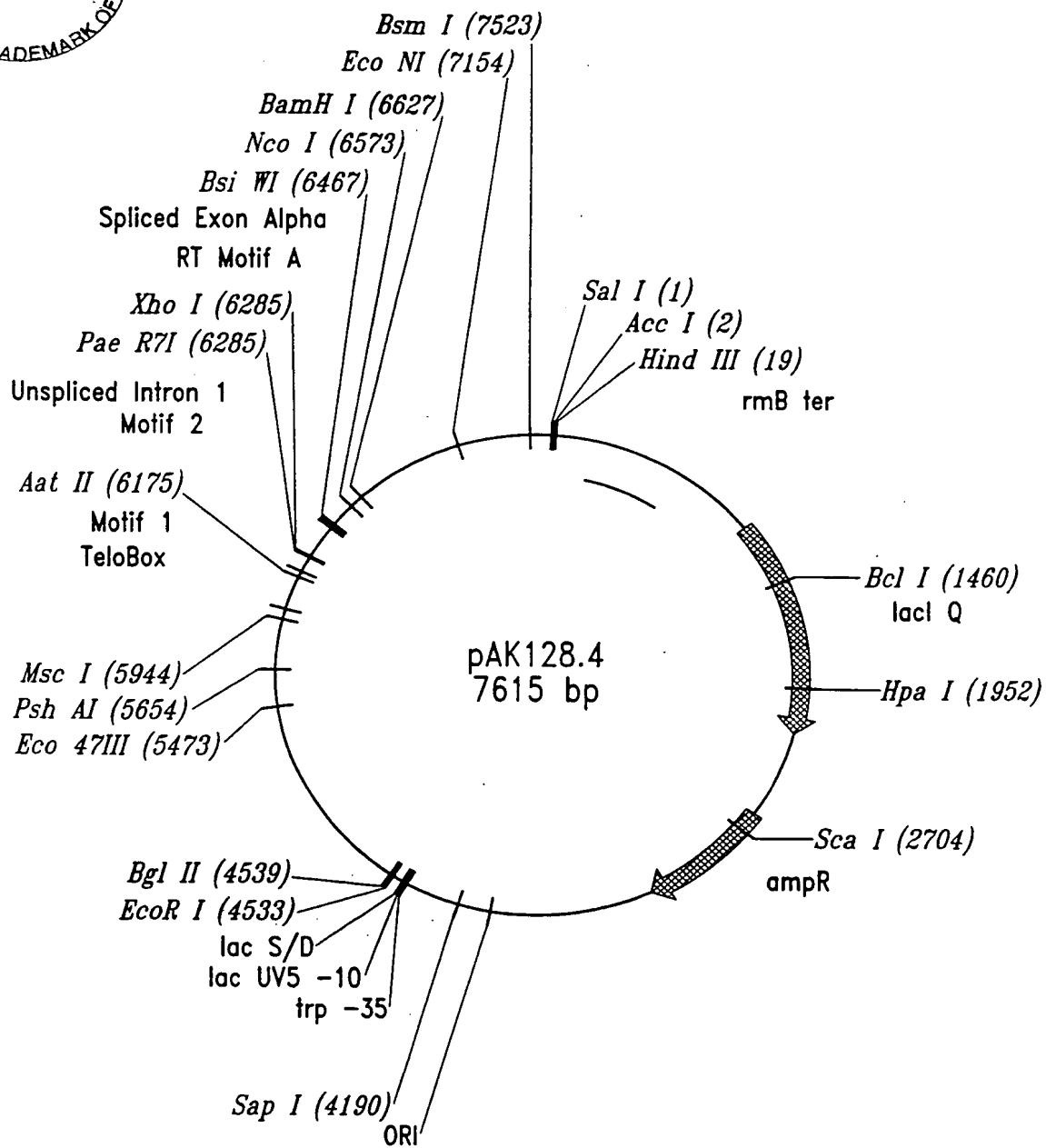
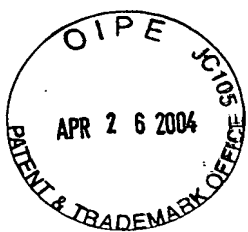


Fig. 13A

LOCUS pAKI28.4 7615 bp dsDNA Circular
 DEFINITION Human telomerase clone with exon beta spliced out



```

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121 aatagcgaag aggccgcgac cgatcgccct tccaacagt tgcgcagcct gaatggcgaa
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```

Fig. 13B



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Fig. 13C



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Fig. 13D

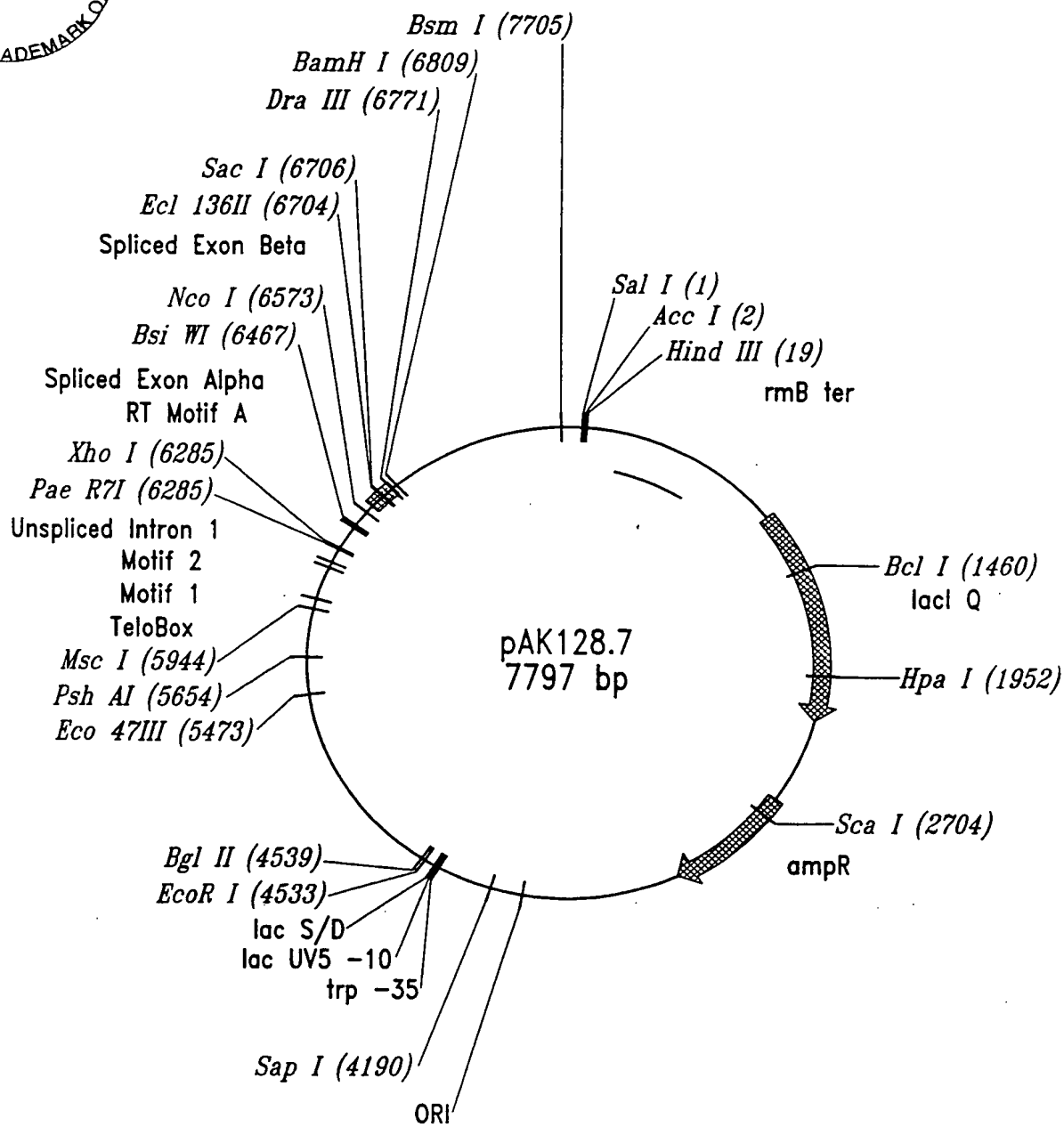


Fig. 14A

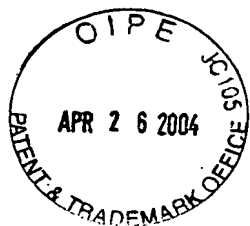
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 DEFINITION Human telomerase clone with alternative C-terminus



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Fig. 14B



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Fig. 14C



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Fig. 14D

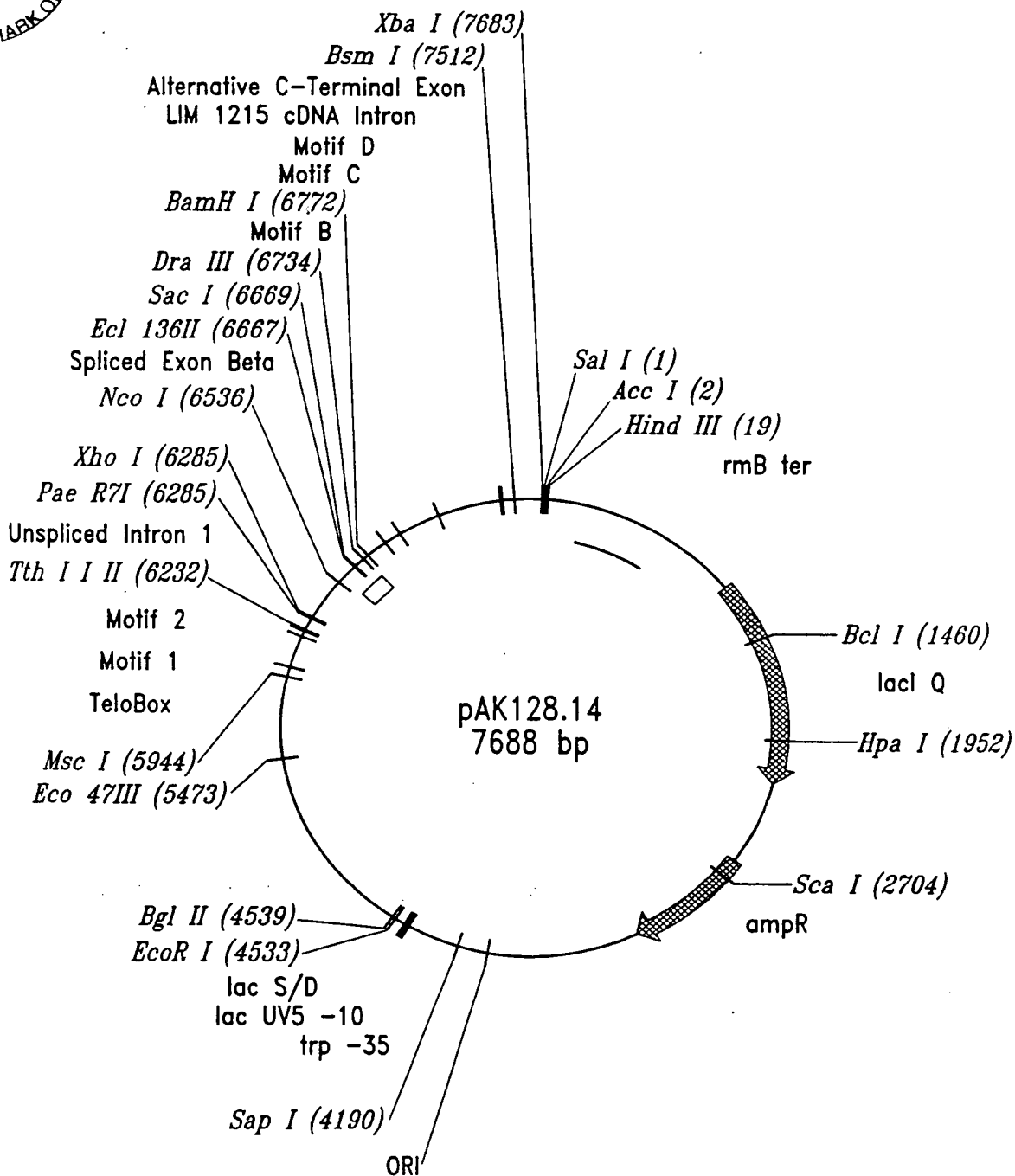
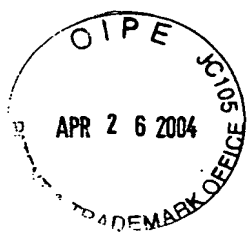
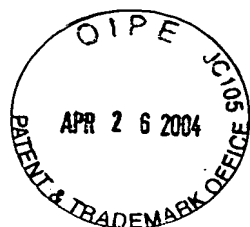


Fig. 15A

LOCUS pAKI28.14 7688 bp dsDNA Circular
 DEFINITION Human telomerase clone with exon alpha spliced out

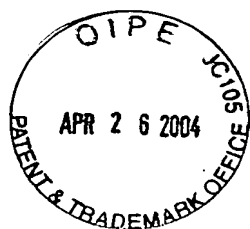


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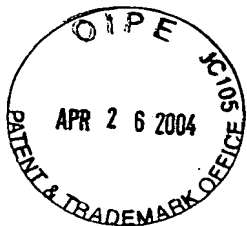
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Fig. 15B



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Fig. 15C



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Fig. 15D

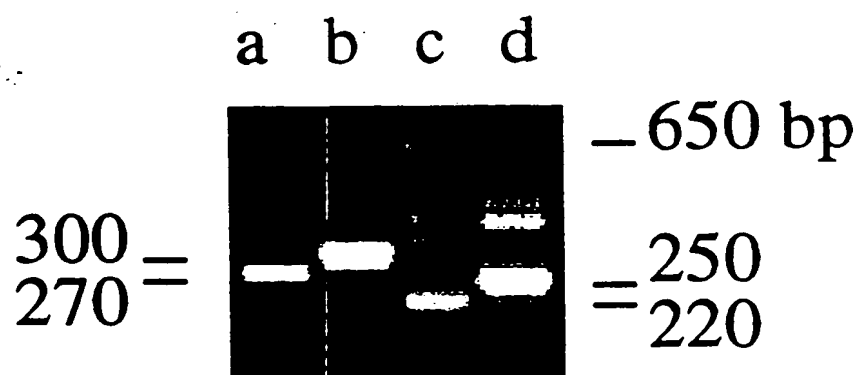


Fig. 9



sequence "Y" 104-105 bases

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AlaSerProGlySerAlaSerGlyTrpGly * GlyArgProGlyGlyThrSer
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ArgHisAlaGluSerSerAlaGlyAspSerGlyArgPheProArgArg
AspMetArgArgAlaAlaGlnAlaThrGlnGlyAlaSerProAlaGly
ThrCysGlyGluGlnArgArgArgLeuArgAlaLeuProProGlnVal

sequence "1" 38 bases

GTGGCTGTGCTTTGGTTTAACTTCCTTTTTAACCAGAA
ValAlaValLeuTrpPheAsnPheLeuPheAsnGlnLys

sequence "α" 36 bases

GTGGATGTGACGGGCGCGTACGACACCATCCCCAG
ValAspValThrGlyAlaTyrAspThrIleProGln

sequence "β" 182 bases

GTCTCTACCTTGACAGACCTCCAGCCGTACATGCGACAGTTCGTGGCTCACCTG
ValSerThrLeuThrAspLeuGlnProTyrMetArgGlnPheValAlaHisLeu

CAGGAGACCAGCCCGCTGAGGGATGCCGTGTCATCGAGCAGAGCTCCTCCCTG
GlnGluThrSerProLeuArgAspAlaValValIleGluGlnSerSerSerLeu

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AsnGluAlaSerSerGlyLeuPheAspValPheLeuArgPheMetCysHisHis

GCCGTGCGCATCAGGGGCAA
AlaValArgIleArgGlyLys

partial sequence "2" unknown length

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Ter

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TGGGAGTGAGGGTGCCTCACAACGGGAGCAGTTTTCTGTGCTATTTTGGTAA...

Fig. 10A



sequence "3" 159 bases

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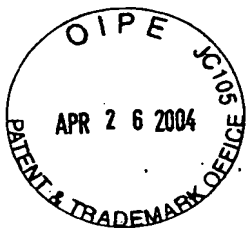
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GlyValGlyLeuGlyLeu *

sequence "X" unknown length

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partial sequence of genomic intron (approximately 2.7 kb)
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GAAAAGCAGCGTGGGGGTGTAGGGGGAGCTCCTGGGGCAGGGAC....

Fig. 10B



Truncated telomerase

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CGGCGCTGGGGCCAGGGCTGGCGGTGGTGACGCGGGGACCGCGGCTTTCCGCGCGTGGTGGCCAGTGCCTGGTGTGCGTGGCTGGGACGCACGGCGCCCGCCGCGCG
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

CCCCCTTCGCCAGGTGTCTGCCTGAAGGAGTGGTGGCCGAGTGTGCAGAGGCTGTGCGAGCGCGCGGAAGACGTGCTGGCTTCGGCTTCGCGTGTGGACGGGGCCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCCGAGGCTTCACCACGAGCGTGGCAGTACCTGCCAAGACGAGTACCGCAGCAGTGCAGGGGAGCGGGCGTGGGGCTGCTGCTGCCCGCGTGGGACGACGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGGTTACCTGCTGGCAGCGTGGCGCTCTTTGCTGGTGGCTCCAGCTGCGCTACAGGTGTGCGGGCGCGCTGTACAGCTCGCGCTGCCACTCAGGCCCGCCCGCCG
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACACGCTAGTGACCCCAAGCGCTCTGGGATGCAACGGGCTGGAACCATAGCGTACGGGAGGCGGGGTCCTCCCTGGGCTGCCAGCCCGGTGCGAGGAGGCGGGGCGAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCCGAAGTGTCCGTTGCCAAGAGGCCAGGCGTGGCGCTGCCCTGAGCGGAGCGGACGCCGTGGGCGAGGGTCTGGGCCACCGGGCAGGACGCTGGACGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGGTTTCTGTGGTGTACCTGCCAGACCGCCGAAGAAGCCACCTCTTTGGAGGGTGGCGTCTCTGGCAGCGCCACTCCACCCATCCGTGGGCGCGCAGCACCAGCGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGCGGCCACCGTCCCTGGGACAGCGCTTGTCCCCGGTGTACGCCGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGTGCAGGCTCTCTCTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

CTCTCTGAGGCCAGCCTGACTGGCGCTCGGAGGCTGTGGAGACCATCTTTCTGGGTTCCAGGCGCTGGATGCCAGGACTCCCGCAGGTTGCCCGCTGCCCGAGCGTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATCGCGCCCTGTTTCTGAGAGTGTCTGGGAACACGCGAGTGGCCCTACGGGTGCTCCTCAAGACGCACTGCCGCTGCGAGCTGCGGTACCCAGCAGCGGTGTCTGTGCCG
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

GGAGAAGCCCGAGGCTCTGTGGCGGCCCGAGGAGGAGACAGACCCCGTGCCTGGTGCAGTGTCTGCCACAGCAGCAGCCCTGGCAGGTGTACGGCTTGTGCGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCCCGGCTGGTGGCCCGAGGCTCTGGGCTCCAGGCACAACGAGCGCTTCTCAGGAACCAAGAAGTTCTCTCCTGGGGAAGCATGCCAAGCTCTCGTGCAGGAGCT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

GACGTGGAAGATGAGCGTGGCGACTGCGTTGGCTGCGCAGGAGCCAGGGGTTGGCTGTGTTCCGGCCGAGAGCAGCGTGTGCGTGAGGAGATCTGGCCAAGTTCTGCACTGGT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L

GATGAGTGTGTACGCTGCTGAGCTGCTCAGGTCTTTCTTTATGTACGGAGACCAGCTTTCAAAGAAGAGGCTCTTTTCTACCGGAAGAGTGTCTGGAGCAAGTTGCAAGATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G

AAT--NNN--GACAGTCACAGGGGGTTGACCGCGGACTGGGCGTCCCGAGGTTGACTATAGGACCAGGTGCCAGGTGCCCTGCAAGTAGAGGGGCTCTCAGAGCGTGTGGCTGG

Fig. 11A



CATGGGTGGACGTGGCCCCGGGCATGGCCTTCTGCGTGTGCTGCCGTGGGTGCCCTGAGCCCTCACTGAGTCGGTGGGGGCTTGTGGCTTCCCGTGAGCTTCCCCCTAGTCTGTTGCTG

GCTGAGCAAGCCTCCTGAGGGGCTCTCTATTG...

Fig. 11B



Truncated protein 1

ATGCCGCGGCTCCCCGCTGCCGAGCCGTGCGCTCCCTGCTGCCGAGCCACTACCGAGGGTGTGCCGTGCCACGTTCTGT
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCTGGGGCCCCAGGGCTGGCGGCTGGTGACGCGGGGACCGCGGCTTTCCGCGGCTGGTGGCCAGTGCTGGTGTGCGTGGCTGGGACGCACGGCCGCCCCGCGCG
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

CCCCCTCTCCGCGAGGTGTCTGCTGAAGGAGCTGGTGGCCGAGTGTGCGAGGCTGTGCCGAGCGGCGCGAAGAAGCTGTGGCTTCGGCTTCGCGCTGTGGACGGGGCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCCGAGGCTTACCACAGCGTGCAGCTACCTGCCAACACGCTGACGACGACTGCGGGGAGCGGGGCTGGGGGTGTGTGTGCGCGCTGGGCGACGACGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGTTACCTGCTGGCAGCTGCGCGCTTTTGTGCTGGTGGCTCCAGCTGCGCTACAGGTGTGGGGCCGCGCTGTACCAGCTCGGCGTGCCTACTAGGCCCGCCCCGCGC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACACGCTAGTGGACCCGAAGCGCTCTGGGATGCGAACGGGCTGGAACCATAGCTCAGGAGGCGGGGTCCCCCTGGGCTGCCAGCCCCGGGTGCGAGGAGCGGGGGCAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCCGAAGTGTGCGTGGCCAAAGAGGCCAGGCGTGGCGCTGCCCTGAGCGGAGCGGACGCCCTTGGGAGGGGTCTGGGCCACCCGGGAGGACCGGTGACCGAGTGAACG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGGTTTCTGTGGTGTACCTGCCAGACCCGCGAAGAAGCCACCTCTTTGAGGGGTGCGCTCTGTGCGACGCGCACTCCACCCATCCGTGGGCGCCAGCACACGCGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGCGGCCACACGCTCCCTGGGACACGCTTGTCCCCGGGTGACGCCGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGCTGCGGCCCTCTTCTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

CTCTCTGAGGCCAGCTGACTGGCGCTCGGAGGCTGTGGAGACCATCTTTGCGGTTCAGGCCCTGGATGCCAGGGACTCCCGCAGGTTGCCCCGCTGCCACGCGCTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATCGGCCCCGTGTTCTGGAGCTGCTTGGGAACACGCGCAGTGCCCTACGGGGTGTCTCAAGACGCACTGCCCGCTGCGAGCTGCGGTACCCAGCAGCGGTGTCTGTGCCG
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

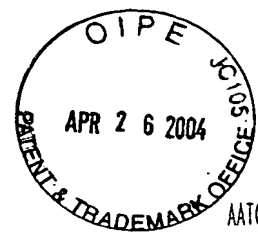
GGAGAAGCCCCAGGGCTCTGTGGCGGCCCCGAGGAGGAGACAGACCCCCGCTGCGTGGTGCAGTGTCTCGCCAGCAGCAGCCCCGCGAGGTGTACGGCTTGTGCGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTGGCCCCAGGCTCTGGGGCTCCAGGCACAACGACGCCCTTCTCAGGAACACCAAGATTCTCTCCCTGGGAAGCATGCCAAGCTCTGCTGCAGGAGCT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

GACGTGAAGATGAGCGTGGGACTGCGCTTGGCTGCGCAGGAGCCAGGGGTGGCTGTGTTCGGCGCAGAGCACCCTGCGTGAGGAGATCTGGCCAAGTTCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L

GATGAGTGTACGTCGTCGAGCTGCTCAGGTCTTTCTTTATGTACGAGAGCACGTTTCAAAAGAAGGCTCTTTTTCTACCGAAGAGTGTCTGGAGCAAGTGTCAAAGCATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G

Fig. 11C



AATCAGACAGCACTTGAAGAGGGTGCAGCTGCGGGAGCTGTCGGAAGCAGAGGTCAGGCAGCATCGGGAAGCCAGGCCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCCAAGCCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D

GTGGCTGTGCTTTGGTTAACTTCCTTTTAAACCAGAA
V A V L W F T F L F N Q K

CGGGCTGCGGCCGATTGTGAACATGGACTACGTGCTGGGAGCCAGAACGTTCCGAGAGAAAAGAGGCCGAGCGTCTCACCTCGAGGGTGAAGGCACTGTTACGCGTGCTCAACTACGA
G L R P I V N M D Y V V G A R T F R R E K R P S V S F R G *

Fig. 11D



Truncated protein 2

ATGCCGCGCGTCCCGCTGCCGAGCGCGCTCCCTGCTGCGCAGCCACTACCGGAGGTGCTGCCGTGGCCAGTTCTGTG
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGGCGCTGGGGCCCGAGGCTGGCGGCTGGTGCAGCGGGGACCGCGGGCTTCCGCGCGCTGGTGGCCAGTGCCTGGTGTGCGTGCCCTGGGACGACGGCCGCCCCCGCGCG
R R L G P O G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

CCCTCCTTCCGCGAGGTGCTGCTGAAGGAGCTGGTGGCCGAGTGTGCAGAGGCTGTGCGAGCGCGCGGAAGAAGCTGTGGCTTCGGCTTCGCGTGTGGACGGGGCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCCGAGGCTTACCACGAGCTGCGCAGCTACCTGCCAACAGGTGACCGACGCACTGGGGGGAGCGGGGCTGGGGGTGCTGTGCGCGCTGGGAGACGAGCT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGGTTCACCTGCTGGCAGCTGCGCGCTCTTTGTGCTGGTGGCTCCAGCTGCGCTACCAGGTGTGCGGGCGCGCGTGTACCAGCTCGGCGCTGCCACTAGGCCGGCCCCCGCG
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACACGCTAGTGACCCCGAAGCGCTGGGATGCGAAGCGGCTGGAACCATAGCGTCAGGAGGCGGGGTCCCTGGGCTGCCAGCCCCGGTGGAGGAGCGCGGGGAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCCGAAGTGTCCGTTGCCAAGAGGCCAGGCGTGGCGTGGCCCTGAGCGGAGCGGACGCGCGTGGGAGGGGTCTGGGCGCCACCGGGCAGGACGCTGGACCGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGGTTTCTGTGGTGTACCTGCCAGACCGCGGAAGAAGCCACCTTTGGAGGGTGGCTCTCTGGCAGCGCCACTCCACCCATCCGTGGGCGCGCAGCACCAGCGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGCGGCCACCACGCTCCCTGGGACACGCTTGTCCCCGGGTACGCGGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGTGGCGCCCTCTTCTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

CTCTGTAGGCGCAGCTGACTGGCGCTCGGAGGCTCGTGAGACCATCTTTCTGGGTTCAGGCGCTGGATGCCAGGACTCCCCGAGGTGGCCCGCTGCCAGCGCTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATCGGGCCCTGTTTCTGAGCTGCTTGGGAACACGCGAGTGCCCCACGGGGTGTCTCAAGACGCACTGCCGCTGCGAGCTGCGGTACCCAGCAGCGGCTGTGTGCCCCG
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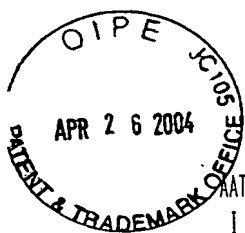
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E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTGGCCCGAGGCTCTGGGGCTCCAGGACAAACGAGCGCTTCTCAGGAACCAAGAAGTTCTCTCCCTGGGGAAGCATGCCAAGCTCTCGTGCAGGAGCT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

GACGTGGAAGATGAGCGTGGGACTGCGCTTGGCTGCGCAGGAGCCAGGGGTGGCTGTGTTCGCGCGCAGAGCACCCTGCTGAGGAGATCTGGCCAAGTTCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L

GATGAGTGTACGTGCTGAGCTGCTCAGGTCTTTCTTTATGTACAGGAGACCGTTTCAAAAAGAGGCTCTTTTCTACCGGAAGAGTGTCTGGAGCAAGTTGCAAGCAATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G

Fig. 11E



ATCAGACAGCACTTGAAGAGGGTGCAGCTGCGGAGCTGTCGGAAGCAGAGGTCAGGCAGCATCGGGAAGCCAGGCCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCAAGCCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
CGGGCTGCGGCCGATTGTGAACATGGACTACGTCGTGGGAGCCAGAAGCTTCGCGAGAGAAAAGGGCCGAGCGTCTCACCTCGAGGGTGAAGGCACTGTTACGCGTCTCAACTACGA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
GCGGGCGCGGCCCGCCCTCTGGGCGCCTCTGTGCTGGGCTGGACGATATCCACAGGGCTGGCGCACCTTCGTGCTGCGTGTGCGGGCCAGGACCCGCGCCTGAGCTGTACTT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F
TGTCAGGTGGATGTGACGGGCGGTACGACACCATCCCCAGGACAGGCTCAGGAGGTATCGCCAGCATCATCAAAACCCAGAACGTAAGTGCCTGCGTGGTATGCCGTGGTCCA
V K V D V T G A Y D T I P Q D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q
GAAGGCCGCCATGGGCAGTCCGCAAGGCCTTCAAGAGCCAC
K A A H G H V R K A F K S H

GTCTACGTCCAGTG
V L R P V

CCAGGGGATCCCGAGGGCTCATCCTCTCCACGCTGCTCTGCAGCCTGTGCTACGGCGACATGGAGAACAAGCTGTTTGGGGGATTCGGCGGGACGGGCTGCTCCTGCGTTTGGTGGA
P G D P A G L H P L H A A L Q P V L R R H G E Q A V C G D S A G R A A P A F G G
TGATTTCTGTTGGTACACCTCACCTCACCCACGCGAAACCTTCTCAGGACCTGGTCCGAGGTGTCCTGAGTATGGCTGCGTGGTGAACCTTGGGAAGACAGTGGTGAACCTTCCC
*

Fig. 11F



Reference protein

ATGCCGCGCGCTCCCCGCTGCCGAGCCGTGCGCTCCCTGCTGCGCAGCCACTACCGCGAG	60
MetProArgAlaProArgCysArgAlaValArgSerLeuLeuArgSerHisTyrArgGlu	20
GTGCTGCCGCTGGCCACGTTCTGTGCGGCGCCTGGGGCCCCAGGGCTGGCGGCTGGTGCAG	120
ValLeuProLeuAlaThrPheValArgArgLeuGlyProGlnGlyTrpArgLeuValGln	40
CGCGGGGACCCGGCGGCTTTCCGCGCGCTGGTGGCCCAGTGCCCTGGTGTGCGTGCCCTGG	180
ArgGlyAspProAlaAlaPheArgAlaLeuValAlaGlnCysLeuValCysValProTrp	60
GACGCACGGCCGCCCCCGCCGCCCTCTCCGCCAGGTGTCCTGCCTGAAGGAGCTG	240
AspAlaArgProProProAlaAlaProSerPheArgGlnValSerCysLeuLysGluLeu	80
GTGGCCCAGTGCTGCAGAGGCTGTGCGAGCGCGCGCAAGAACGTGCTGGCCTTCGGC	300
ValAlaArgValLeuGlnArgLeuCysGluArgGlyAlaLysAsnValLeuAlaPheGly	100
TTGCGCTGCTGGACGGGGCCCGGGGGCCCCCGAGGCCTTCACCACGCGTGCGC	360
PheAlaLeuLeuAspGlyAlaArgGlyGlyProProGluAlaPheThrThrSerValArg	120
AGCTACCTGCCCCAACACGGTGACCGACGCACTGCGGGGGAGCGGGGCGTGGGGGCTGCTG	420
SerTyrLeuProAsnThrValThrAspAlaLeuArgGlySerGlyAlaTrpGlyLeuLeu	140
TTGCGCCGCGTGGGCGACGACGTGCTGGTTCACCTGCTGGCACGCTGCGCGCTCTTTGTG	480
LeuArgArgValGlyAspAspValLeuValHisLeuLeuAlaArgCysAlaLeuPheVal	160
CTGGTGGCTCCCAGCTGCGCCTACCAGGTGTGCGGGCCCGCGCTGTACCAGCTCGGCGCT	540
LeuValAlaProSerCysAlaTyrGlnValCysGlyProProLeuTyrGlnLeuGlyAla	180
GCCACTCAGGCCCGCCCCCGCCACACGCTAGTGGACCCCGAAGGCGTCTGGGATGCGAA	600
AlaThrGlnAlaArgProProProHisAlaSerGlyProArgArgArgLeuGlyCysGlu	200
CGGGCCTGGAACCATAGCGTCAGGGAGGCCGGGGTCCCCCTGGGCCTGCCAGCCCCGGGT	660
ArgAlaTrpAsnHisSerValArgGluAlaGlyValProLeuGlyLeuProAlaProGly	220
GCGAGGAGGCGGGGGCAGTGCCAGCCGAAGTCTGCCGTTGCCAAGAGGCCAGGCGT	720
AlaArgArgArgGlyGlySerAlaSerArgSerLeuProLeuProLysArgProArgArg	240
GGCGCTGCCCCTGAGCCGGAGCGGACGCCCGTTGGGCAGGGGTCTGGGCCCACCCGGGC	780
GlyAlaAlaProGluProGluArgThrProValGlyGlnGlySerTrpAlaHisProGly	260
AGGACGCGTGGACCGAGTGACCGTGGTTTCTGTGTGGTGTACCTGCCAGACCCGCCGAA	840
ArgThrArgGlyProSerAspArgGlyPheCysValValSerProAlaArgProAlaGlu	280
GAAGCCACCTCTTTGGAGGGTGCGCTCTCTGGCACGCGCCACTCCCACCCATCCGTGGGC	900
GluAlaThrSerLeuGluGlyAlaLeuSerGlyThrArgHisSerHisProSerValGly	300

Fig. 11G



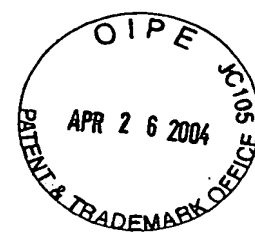
CGCCAGCACCACGCGGGCCCCCATCCACATCGCGGCCACCACGTCCCTGGGACACGCCT	960
ArgGlnHisHisAlaGlyProProSerThrSerArgProProArgProTrpAspThrPro	320
TGTCCCCCGGTGTACGCCGAGACCAAGCACTTCCTCTACTCCTCAGGCGACAAGGAGCAG	1020
CysProProValTyrAlaGluThrLysHisPheLeuTyrSerSerGlyAspLysGluGln	340
CTGCGGCCCTCCTTCTACTCAGCTCTCTGAGGCCAGCCTGACTGGCGCTCGGAGGCTC	1080
LeuArgProSerPheLeuLeuSerSerLeuArgProSerLeuThrGlyAlaArgArgLeu	360
GTGGAGACCATCTTTCTGGGTTCCAGGCCCTGGATGCCAGGGACTCCCCGCAGGTTGCC	1140
ValGluThrIlePheLeuGlySerArgProTrpMetProGlyThrProArgArgLeuPro	380
CGCCTGCCCCAGCGCTACTGGCAAATGCGGCCCTGTTTCTGGAGCTGCTTGGGAACCAC	1200
ArgLeuProGlnArgTyrTrpGlnMetArgProLeuPheLeuGluLeuLeuGlyAsnHis	400
GCGCAGTGCCCTACGGGGTGCTCCTCAAGACGCACTGCCCCGCTGCGAGCTGCGGTCACC	1260
AlaGlnCysProTyrGlyValLeuLeuLysThrHisCysProLeuArgAlaAlaValThr	420
CCAGCAGCCGGTGTCTGTGCCCCGGGAGAAGCCCCAGGGCTCTGTGGCGGCCCCGAGGAG	1320
ProAlaAlaGlyValCysAlaArgGluLysProGlnGlySerValAlaAlaProGluGlu	440
GAGGACACAGACCCCCGTCGCTGGTGCAGCTGCTCCGCCAGCACAGCAGCCCCTGGCAG	1380
GluAspThrAspProArgArgLeuValGlnLeuLeuArgGlnHisSerSerProTrpGln	460
GTGTACGGCTTCGTGCGGGCCTGCCTGCGCCGGCTGGTGCCCCAGGCCTCTGGGGCTCC	1440
ValTyrGlyPheValArgAlaCysLeuArgArgLeuValProProGlyLeuTrpGlySer	480
AGGCACAACGAACGCCGCTTCCTCAGGAACACCAAGAAGTTCATCTCCCTGGGGAAGCAT	1500
ArgHisAsnGluArgArgPheLeuArgAsnThrLysLysPheIleSerLeuGlyLysHis	500
GCCAAGCTCTCGCTGCAGGAGCTGACGTGGAAGATGAGCGTGCGGGGCTGCGCTTGGCTG	1560
AlaLysLeuSerLeuGlnGluLeuThrTrpLysMetSerValArgAspCysAlaTrpLeu	520
CGCAGGAGCCCAGGGGTTGGCTGTGTTCCGGCCGAGAGCACCGTCTGCGTGAGGAGATC	1620
ArgArgSerProGlyValGlyCysValProAlaAlaGluHisArgLeuArgGluGluIle	540
CTGGCCAAGTTCCTGCACTGGCTGATGAGTGTGTACGTCGTCGAGCTGCTCAGGTCTTTC	1680
LeuAlaLysPheLeuHisTrpLeuMetSerValTyrValValGluLeuLeuArgSerPhe	560
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PheTyrValThrGluThrThrPheGlnLysAsnArgLeuPhePheTyrArgLysSerVal	580
TGGAGCAAGTTGCAAAGCATTGGAATCAGACAGCACTTGAAGAGGGTGACGTGCGGGAG	1800
TrpSerLysLeuGlnSerIleGlyIleArgGlnHisLeuLysArgValGlnLeuArgGlu	600
CTGTCGGAAGCAGAGGTCAGGCAGCATCGGGAAGCCAGGCCCGCCCTGCTGACGTCCAGA	1860
LeuSerGluAlaGluValArgGlnHisArgGluAlaArgProAlaLeuLeuThrSerArg	620

Fig. 11H



CTCCGCTTCATCCCCAAGCCTGACGGGCTGCGGCCGATTGTGAACATGGACTACGTCGTG LeuArgPheIleProLysProAspGlyLeuArgProIleValAsnMetAspTyrValVal	1920 640
GGAGCCAGAACGTTCCGCAGAGAAAAGAGGGCCGAGCGTCTCACCTCGAGGGTGAAGGCA GlyAlaArgThrPheArgArgGluLysArgAlaGluArgLeuThrSerArgValLysAla	1980 660
CTGTTACGCGTGCTCAACTACGAGCGGGCGGCGCCCCGGCCTCCTGGGCGCCTCTGTG LeuPheSerValLeuAsnTyrGluArgAlaArgArgProGlyLeuLeuGlyAlaSerVal	2040 680
CTGGGCCTGGACGATATCCACAGGGCCTGGCGCACCTTCGTGCTGCGTGTGCGGGCCCAG LeuGlyLeuAspAspIleHisArgAlaTrpArgThrPheValLeuArgValArgAlaGln	2100 700
GACCCGCCGCTGAGCTGTACTTTGTCAAGGTGGATGTGACGGGCGCGTACGACACCATC. AspProProProGluLeuTyrPheValLysValAspValThrGlyAlaTyrAspThrIle	2160 720
CCCCAGGACAGGCTCACGGAGGTCATGCCAGCATCATCAAACCCAGAACACGTACTGC ProGlnAspArgLeuThrGluValIleAlaSerIleIleLysProGlnAsnThrTyrCys	2220 740
GTGCGTCGGTATGCCGTGGTCCAGAAGGCCGCCCATGGGCACGTCCGCAAGGCCTTCAAG ValArgArgTyrAlaValValGlnLysAlaAlaHisGlyHisValArgLysAlaPheLys	2280 760
AGCCACGTCTCTACCTTGACAGACCTCCAGCCGTACATGCGACAGTTCTGGCTCACCTG SerHisValSerThrLeuThrAspLeuGlnProTyrMetArgGlnPheValAlaHisLeu	2340 780
CAGGAGACCAGCCCGCTGAGGGATGCCGTGTCATCGAGCAGAGCTCCTCCCTGAATGAG GlnGluThrSerProLeuArgAspAlaValValIleGluGlnSerSerSerLeuAsnGlu	2400 800
GCCAGCAGTGGCCTCTTCGACGTCTTCCTACGCTTCATGTGCCACCACGCCGTGCGCATC AlaSerSerGlyLeuPheAspValPheLeuArgPheMetCysHisHisAlaValArgIle	2460 820
AGGGGCAAGTCTCTACGTCCAGTGCCAGGGGATCCCGCAGGGCTCCATCCTCTCCACGCTG ArgGlyLysSerTyrValGlnCysGlnGlyIleProGlnGlySerIleLeuSerThrLeu	2520 840
CTCTGCAGCCTGTGCTACGGCGACATGGAGAACAAGCTGTTTGCGGGGATTGCGCGGGAC LeuCysSerLeuCysTyrGlyAspMetGluAsnLysLeuPheAlaGlyIleArgArgAsp	2580 860
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AAACCTTCCTCAGGACCCTGGTCCGAGGTGTCCCTGAGTATGGCTGCGTGGTGAACCTG LysThrPheLeuArgThrLeuValArgGlyValProGluTyrGlyCysValValAsnLeu	2700 900
CGGAAGACAGTGGTGAACCTTCCTGTAGAAGACGAGGCCCTGGGTGGCACGGCTTTTGTT ArgLysThrValValAsnPheProValGluAspGluAlaLeuGlyGlyThrAlaPheVal	2760 920
CAGATGCCGGCCCCACGGCCTATTCCCCTGGTGCGCCTGCTGCTGGATACCCGGACCCTG GlnMetProAlaHisGlyLeuPheProTrpCysGlyLeuLeuLeuAspThrArgThrLeu	2820 940

Fig. 11I



GAGGTGCAGAGCGACTACTCCAGCTATGCCCCGACCTCCATCAGAGCCAGTCTCACCTTC	2880
GluValGlnSerAspTyrSerSerTyrAlaArgThrSerIleArgAlaSerLeuThrPhe	960
AACCGCGGCTTCAAGGCTGGGAGGAACATGCGTCGCAAACTCTTTGGGGTCTTGCGGCTG	2940
AsnArgGlyPheLysAlaGlyArgAsnMetArgArgLysLeuPheGlyValLeuArgLeu	980
AAGTGTACAGCCTGTTTCTGGATTTGCAGGTGAACAGCCTCCAGACGGTGTGCACCAAC	3000
LysCysHisSerLeuPheLeuAspLeuGlnValAsnSerLeuGlnThrValCysThrAsn	1000
ATCTACAAGATCCTCCTGCTGCAGGCGTACAGGTTTCACGCATGTGTGCTGCAGCTCCCA	3060
IleTyrLysIleLeuLeuLeuGlnAlaTyrArgPheHisAlaCysValLeuGlnLeuPro	1020
TTTCATCAGCAAGTTTGAAGAACCCACATTTTTCTGCGCGTCATCTCTGACACGGCC	3120
PheHisGlnGlnValTrpLysAsnProThrPhePheLeuArgValIleSerAspThrAla	1040
TCCCTCTGCTACTCCATCCTGAAAGCCAAGAACGCAGGGATGTCGCTGGGGGCCAAGGGC	3180
SerLeuCysTyrSerIleLeuLysAlaLysAsnAlaGlyMetSerLeuGlyAlaLysGly	1060
GCCGCCGGCCCTCTGCCCTCCGAGGCCGTGCAGTGGCTGTGCCACCAAGCATTCTGCTC	3240
AlaAlaGlyProLeuProSerGluAlaValGlnTrpLeuCysHisGlnAlaPheLeuLeu	1080
AAGCTGACTCGACACCGTGTACCTACGTGCCACTCCTGGGGTCACTCAGGACAGCCCAG	3300
LysLeuThrArgHisArgValThrTyrValProLeuLeuGlySerLeuArgThrAlaGln	1100
ACGCAGCTGAGTCGGAAGCTCCCGGGGACGACGCTGACTGCCCTGGAGGCCGAGCCAAC	3360
ThrGlnLeuSerArgLysLeuProGlyThrThrLeuThrAlaLeuGluAlaAlaAlaAsn	1120
CCGGCACTGCCCTCAGACTTCAAGACCATCCTGGAC	3420
ProAlaLeuProSerAspPheLysThrIleLeuAsp	1132

Fig. 11J



Truncated protein 3

ATGCCGCGGCTCCCGCTGCCAGCCGTGCGCTCCCTGCTGCGCAGCCACTACCGCGAGGTGCTGCCGTGGCCAGTTCGTG
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCTTGGGGCCAGGGCTGGCGGTGGTGCAGCGGGGACCGGGGCTTCCGCGGCTGGTGGCCAGTGCCTGGTGTGCGTGCCTGGGACGCACGGCCGCCCGCGCG
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

CCCCCTCTCCGCCAGGTGCTGCTGAAGGAGTGGTGGCCGAGTGTGCTGAGAGGTGTGCGAGCGGGCGGAAGAACGTGCTGGCCTTCGGCTTCGCGTGTGGACGGGGCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCCGAGGGCTTACCACAGCGTGCAGCTACCTGCCAACACGGTGACCGACCACTGCGGGGAGCGGGGCTGGGGGCTGCTGCTGCGCGCGTGGGACGACGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGTTACCTGCTGGCAGCTGCGCGCTCTTTGTGCTGGTGGCTCCAGCTGCGCTACCAAGTGTGCGGGCGCGCTGTACCAGCTCGGCGTGCCTCAGGCCGGCCCCGCG
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACACGCTAGTGGACCCGAGGCGTCTGGGATGCCAAGGGCTGGAACCATAGCGTCAGGGAGGCGGGGCTCCCTGGGCTGCCAGCCCCGGGTGCGAGGAGCGGGGGCAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCCGAAGTCTGCCGTGCCAAGAGGCCAGGCGTGGCGTGGCCCTGAGCGGAGCGGACGCCGTGGGCGAGGGTCTGGGCCACCGGGCAGGACGCTGGACCGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGTTTCTGTGTGTGTCACCTGCCAGACCCCGGAAGGCCACCTCTTTGGAGGGTGGCTCTCTGGCAGCGCCACTCCACCCATCCGTGGGCGCCAGCACCAGCGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGCGCCACCAGTCCCTGGGACACGCTTGTCCCCGGTGTACGCCGAGACCAAGCACTTCCTTACTCTCAGGCGACAAGGAGCAGTGGGGCTCTCTTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

CTCTGAGGCGCAGCTGACTGGCGCTCGGAGGCTCGTGGAGACCATCTTTCTGGGTTCAGGCGCTGGATGCCAGGGACTCCCGCAGGTGCCCCGCTGCCCCAGCGCTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATCGGGCCCTGTTTCTGGAGTGTGTTGGGAACACGCGAGTGCCTTACGGGTGCTCCTCAAGACCACTGCCGCTGCGAGTGGGTCACCCAGCAGCGGTGTGTGCCCC
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

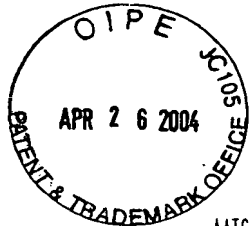
GGAGAAGCCCCAGGGCTCTGTGGCGGGCCCCGAGGAGGAGACAGACCCCGTGCCTGGTGCAGTGTCTCCGACGACAGCAGCCCTGGCAGGTGTACGGCTTCGTGCGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTGGCCCCAGGCTCTGGGGCTCCAGGCACAACACCGCTTCTCAGGAACCAAGAAGTTCATCTCCCTGGGAAGCATGCCAAGCTCTCGTGCAGGAGCT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

GACGTGGAAGATGAGCGTGGGACTGCGCTTGGCTGGCGAGGAGCCAGGGGTGGCTGTGTTCCGGCCGAGAGCAGCTGCTGCGTGAAGAGATCTGGCCAAGTTCCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L

GATGAGTGTGTACGTCGAGCTGCTCAGGTCTTTCTTTTATGTACGGAGACACGTTTCAAAGAAGAGGCTCTTTTCTACCGGAAGAGTGTGAGGCAAGTGTCAAAGATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G

Fig. 11K



AATCAGACGACCTTGAAGAGGGTGCAGCTGCGGGAGCTGTGGAAGCAGAGGTGAGGCAGCATCGGGAAGCCAGGCCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCAAGCCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D

C6GGCTGCGGCCGATTGTGAACATGGAAGTACGTGAGGAGCCAGAACGTTCCGACAGAAAAGAGGCCGAGCGTCTACCTCGAGGGTGAAGGCACTGTTACGCGTCTCAACTACGA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E

GC6GGCGCGGCCCGCCGCTCTGCTGCTGGGCTGGACGATATCCAGGGCTGGCGCACCTTCGTGCTGCGTGTGCGGGCCAGGACCCGCGCTGAGCTGACTT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F

TGTCAAGGTGGATGTGACGGGCGGTACGACACCATCCCCAGGACAGGCTCAGGAGGTGATCGCCAGCATCATCAACCCAGAACACGTACTGCGTGGTGGTATGCGGTGGTCCA
V K V D V T G A Y D T I P Q D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q

GAAGGCCGCCATGGGACGTCGCAAGGCCCTCAAGAGCCAGCTCTACCTTGACAGACCTCCAGCGTACATGCGACAGTTCGTGGCTCACCTGCAGGAGACAGCCCGTGAAGGA
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D

TGCCGTGTCATCGAGCAGAGCTCTCCCTGAATGAGGCCAGCAGTGGCTCTTCGACGCTTCTACGCTTCATGTGCCACACGCCGTGCGCATCAGGGGCAAGTCTACGTCAGTG
A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C

CCAGGGGATCCCGAGGGCTCCATCCTCTCCACGCTGCTCTGCAGCCTGTGCTACGGGACATGGAGAACAAGCTGTTTGGGGGATTGCGGGGACGGGCTGCTCCTGCTTGGTGA
Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R L V D

TGATTTCTGTTGGTGACACCTCACCTCACCCACGCAAAACCTTCTCAGGACCTGGTCCGAGGTGCTCCCTGAGTATGGCTGCGTGGTGAAGTTCGGAAGACAGTGGTGAAGTCCC
D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P

TGTAGAAGACGAGGCCCTGGGTGGCAGGGCTTTTGTTCAGATGCGGGCCACGGCTATTCCCTGGTGGGCTGCTGCTGGATACCGGACCTGGAGGTGCAGAGGCACTACTCCAG
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S R

GTGAGGCACCTGGCCGAAGTGGAGCCTGTGCCGGCTGGGGCAGGTGCTGCTGCAGGGCGTTGCGTCCACCTCTGCTTCCGTGTGGGGCAGGCACTGCCAATCCCAAGGGTCAGA
*

TGCCACAGGGTGCCCTCGTCCCATCTGGGGCTGAGCACAAATGCATCTTTCTGTGGGAGTGAGGGTGCCTCACAACGGGAGCAGTTTTCTGTGCTATTTTGGTAA.....

Fig. 11L



Altered C-terminus protein

ATGCCGCGCGCTCCCGCTGCCAGCGCGTGGCTCCCTGCTGCGCAGCCACTACCGCGAGGTGCTGCCGCTGGCCACGTTCCGT
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCCTGGGGCCCGAGGCTGGCGGCTGGTGCAGCGGGGACCGCGGCTTTCCGCGCGCTGGTGGCCAGTGCCTGGTGTGCGTGGCCTGGGACGCACGGCCGCCCCCGCGC
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

CCCCCTCTCCGCCAGGTGCTGCTGAAGGAGCTGGTGGCCGAGTGTGCAGAGGCTGTGCGAGCGCGCGGAAGAAGTGTGGCTTCGGCTTCGCGCTGCTGGACGGGGCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCCGAGGCTTACCACACAGCTGCGCAGCTACCTGCCAACACGGTGACCGACGACTGCGGGGAGCGGGCGTGGGGCTGCTGCTGCGCCGCGTGGGCGACGACGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGGTTCACCTGCTGGCAGCTGCGCGCTTTTGTGCTGGTGGCTCCAGCTGCGCTACAGGTGTGCGGGCGCGCTGTACCAGCTGCGCGTGCCTACTCAGGCCGGCCCCCGC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACACGCTAGTGGACCCGAGGCGTCTGGGATGCCAACGGGCTGGAACCATAGCGTCAGGAGGCGGGGTCCCTGGGCTGCCAGCCCGGGTGCAGGAGGCGGGGGCAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCCGAAGTCTGCCGTGCCAAGAGGCCAGGCGTGGCGCTGCCCTGAGCGGAGCGGAGCCCGTGGGCGAGGGTCTGGGCCACCGGGCAGGACGCGTGGACCGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGGTTCTGTGTGCTACCTGCCAGACCCGCGAAGAAGCCACCTTTTGGAGGGTGGCGCTCTGCGCAGCGCCACTCCACCCATCCGTGGGCGCCAGCACCAGCGGGGCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGCGGCCACCGCTCCCTGGGACCGCTTGTCCCCGGGTGACGCGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGCTGCGGCCCTCTTCTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

CTCTGAGGCCAGCCTGACTGGCGCTCGGAGGCTCGTGGAGACCATTTTCTGGGTTCAGGCGCTGGATGCCAGGACTCCCGCAGGTTGCCCCGCTGCCCGAGCGTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATGCGGCCCTGTTTCTGGAGCTGCTGGGAACACGCGAGTGGCCCTACGGGGTGGCTCTCAAGACGCACTGCCGCTGCGAGCTGCGGTACCCAGCAGCGGTGTGTGCCCC
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

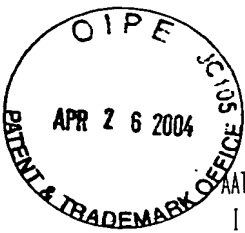
GGAGAAGCCCCAGGCTCTGTGGCGGCCCGAGGAGGAGACACAGACCCCGTGGCTGGTGCAGTGTCTCCGCGACAGCAGCCCTGGCAGGTGTACGGCTTCGTGGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTGGCCCCAGGCTCTGGGGCTCCAGGCACAACGAAGCCGCTTCTCAGGAACACCAAGAAGTTTCATCTCCCTGGGAAGCATGCCAAGCTCTCGCTGCAGGAGCT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

GACGTGGAAGATGAGCGTGGGACTGCGCTTGGCTGCGAGGAGCCAGGGTGGCTGTGTTCCGCGCGCAGAGCAGCGTCTGCGTGAGGAGATCTGGCCAAGTTCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L

GATGAGTGTGACGCTGCTGAGCTGCTCAGGTCTTTCTTTATGTACGGAGACACGTTTCAAAGAAGCGCTTTTTTACCGGAAGAGTGTCTGGAGCAAGTTGCAAGCATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G

Fig. 11M



AATCAGACGACTTGAAGAGGGTGCAGCTGCGGGAGCTGTGGAAGCAGAGGTAGGCAGCATCGGAAGCCAGGCCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCCAAGCCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D
CGGGCTGCGCCGATTGTGAACATGGACTACGTCGTGGGAGCCAGAAGCTTCCGCAGAGAAAAGAGGGCCGAGCGTCTCACCTCGAGGGTGAAGGCACTGTTACGCGTGTCAACTACGA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E
CGGGCGCGGGCCCGCCCTCTGGGCGCCTGTGTGTGGGCTGGACGATATCCACAGGGCTGGGCGACCTTCGTGCTGCGTGTGCGGGCCAGGACCCGCGCCTGAGCTGACTT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F
TGTCAAGGTGGATGTGACGGGCGGTACGACACCATCCCCAGGACAGGCTCAGGAGGTGCATGCCAGCATCATCAAAACCCAGAACGTAAGTACTGCGTGGCTGCGTATGCCGTGGTCCA
V K V D V T G A Y D T I P Q D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q
GAAGGCCGCCATGGGACGTCCGAAGGCCCTCAAGAGCCAGCTCTTACCTTGACAGACCTCCAGCGTACATGCGACAGTTCGTGGCTCACCTGCGAGGAGACCAGCCGCTGAGGGA
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D
TGCGTGTGCATCGAGCAGAGCTCCTCCCTGAATGAGGCCAGCAGTGGCCTCTTGACGCTTCTTACGCTTCATGTGCCACCAGCCGTCGCGATCAGGGGCAAGTCTACGTCCAGTG
A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C
CCAGGGGATCCCGAGGGCTCCATCCTCTCCACGCTGCTGTGAGCCTGTGTACGGGACATGGAGAACAAGCTGTTTGGGGGATTGCGGGGACGGGCTGCTCCTGCGTTTGGTGA
Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R L V D
TGATTTCTTGTGTGACACCTCACCTCACCCACGGAACCTTCTCAGGACCTGGTCCGAGGTGTCCCTGAGTATGGCTGCGTGGTGAAGTTCGCGAAGACAGTGGTGAAGTTCCTC
D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P
TGTAAGACGAGGCCCTGGGTGGCAGGCTTTTGTTCAGATGCCGGCCACGGCCTATTCCCTGGTGGGCTGCTGCTGGATACCCGAGCCTGGAGGTGCAGAGCGACTACTCCAG
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S S
CTATGCCCGGACCTCCATCAGAGCCAGTCTCACCTTCAACCGCGGCTTCAAGGCTGGGAGGAACATGCGTCGCAAACTCTTTGGGGTCTTGGGCTGAAGTGTACAGCCTGTTTCTGGA
Y A R T S I R A S L T F N R G F K A G R N M R R K L F G V L R L K C H S L F L D
TTTGAGGTGAACAGCCTCCAGACGGTGTGCACCAACATCTACAAGATCCTCTGCTGAGGCGTACAGGTTTCACGCATGTGTGCTGAGCTCCCATTTTCATCAGCAAGTTTGAAGAA
L Q V N S L Q T V C T N I Y K I L L L Q A Y R F H A C V L Q L P F H Q Q V W K N
CCCCACATTTTCTGCGGCTCATCTCTGACAGGCTCCCTCTGCTACTCATCTCTGAAAGCAAGAAGCAGGAGTGTGCTGGGGGCCAAGGGCGCCGCGCCCTCTGCTCCCGA
P T F F L R V I S D T A S L C Y S I L K A K N A E

CCGAAGAAAACATTTCTGCTGACTCCTGCGGTGCTGGGTG
E E N I L V V T P A V L G S

GGGACAGCCAGAGATGGAGCCACCCGCGAGACCGTGGGTGTGGGAGCTTTCCGGTGTCTCTGGGAGGGAGTTGGGCTGGGCTGTGACTCCTCAGCCTCTGTTTTCCCCAG
G Q P E M E P P R R P S G V G S F P V S P G R G V G L G L *

Fig. 11N



Protein that lacks motif A

ATGCCGCGCGCTCCCCGCTGCCGAGCCGTGCGCTCCCTGCTGCGCAGCCACTACCGCGAGGTGCTGCCGCTGCCACGTTCTGTG
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCTGGGGCCCCAGGGCTGGCGGCTGGTGACGCGGGGACCCGGCGGCTTTCCGCGCGCTGGTGCCCACTGCTGTGCTGCTGGGACGACGCGCGCCCCCGCGC
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

CCCCCTCTCCGCCAGGTGCTGCTGAAGGAGCTGGTGGCCGAGTGTGACAGGCTGTGCGAGCGGGCGCAAGAAGCTGCTGGCTTCGGCTTCGCGCTGCTGGACGGGGCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCAGGCTTACCACAGCGTGGCAGCTACCTGCCAACAGCGTGACCGACGACTGCGGGGAGCGGGGCTGGGGCTGCTGCTGCGCGCGTGGGCGACGACGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGGTTCACCTGCTGGCAGCTGCGCGCTTTGTGCTGGTGGCTCCAGCTGCGCTACAGGTGTGCGGGCGCGCTGTACCAGCTCGGCGTGCCACTCAGGCCCGCCCCGCG
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACACGCTAGTGACCCGAAGGCTCTGGGATGCGAACGGGCTGGAACCATAGCGTCAGGGAGGCGGGGCTCCCCCTGGGCTGCCAGCCCCGGGTGCGAGGAGCGCGGGGCGAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCGAAGTCTGCGTTGCCAAGAGGCCAGGCGTGGCGCTGCCCTGAGCGGAGCGGACGCCGTTGGGCGGGGCTCTGGGCCACCGGGCAGGACGCGTGACCGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGGTTTCTGTGGTGTACCTGCCAGACCCGCCAAGAGCCACCTCTTTGGAGGTCGCTCTCTGGCAGCGCCACTCCACCCATCGTGGGCCGCCAGCACCAGCGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGCGGCCACCGCTCCCTGGGACACGCTTGTCCCCCGGTGTACGCGGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGCTGCGGCCCTCTCTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

CTCTCTAGGCCCAGCCTGACTGGCGCTGGAGGCTCGTGGAGACCATCTTTCTGGGTTCCAGGCCCTGGATGCCAGGACTCCCCGAGGTTGCCCGGCTGCCCGAGCCTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATGGGCCCCGTGTTTCTGGAGCTGCTTGGGAACACGCGCAGTGGCCCTACGGGTGCTCCTCAAGCGCACTGCCCCGCTGCGAGCTGCGGTACCCAGCAGCGGTGCTGTGCCCCG
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

GGAGAAGCCCCAGGCTCTGTGGCGGGCCCCGAGGAGGAGACAGACCCCGTCCCTGGTGCAGCTGCTCCGCCAGCAGCAGCCCTGCGAGGTGTACGGCTTCGTGCGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTGGCCCCAGGCTCTGGGGCTCCAGGCACAACGAAGCGCTTCTCAGGAACACCAAGAAGTTCTCTCCCTGGGAAGCATGCCAAGCTCTCGTGCAGGAGCT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

GACGTGGAAGTAGCGCTGCGGACTGCGCTTGGTGGCGAGGAGCCAGGGGTTGGTGTGTTCCGGCGCAGAGCACCCTGCGTGAGGAGATCTGGCCAAGTTCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L

GATGAGTGTACGTGCTGAGCTGCTCAGGCTTTTCTTTATGTCAGGAGACCAGGTTTCAAAGAAGAGGCTTTTCTACCGGAAGAGTGTGAGCAAGTTGCAAGCATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G

Fig. 110



AATCAGACAGCACTTGAAGAGGGTGCAGCTGCGGGAGCTGTGCGGAAGCAGAGGTACGGCAGCATCGGGAAGCCAGGCCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCCAAGCCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D

CGGGCTGCGGCCGATTGTGAACATGGACTACGTGCGGGAGCCAGAACGTTCCGCAGAGAAAAGAGGGCCGAGCGTCTACCTCGAGGGTGAAGGCACTGTTACGCGTCTCAACTAGCA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E

GCGGGCGCGGCCCGCCCGCTCTGCGGCGCTGTGCTGCGGCTGGAGCATATCCACAGGGCTGGCGACCTTCGTGCTGCGTGTGCGGGCCAGGACCCGCGCTGAGCTGTACTT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F

TGTC AAG GACAGGCTACGGAGGTATCGCCAGCATCATCAAAACCCAGAACAGTACTGCGTGGCTGGTATGCCGTGGTCCA
V K D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q

GAAGGCCGCCCATGGGCAGTCCGCAAGGCCCTTCAAGAGCCAGCTCTACCTTGACAGACCTCCAGCGTACATGCGACAGTTCGTGGCTCACCTGCAGGAGACCAGCCCGCTGAGGGA
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D

TGCGCTGTCATCGAGCAGAGCTCCTCCCTGAATGAGGCCAGCAGTGGCCTCTTCGACGCTTCTACGCTTCATGTGCCACCACGCCGTGCGCATCAGGGGCAAGTCTACGTCCAGTG
A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C

CCAGGGGATCCCGCAGGGCTCCATCCTCTCCACGCTGCTCTGCAGCCTGTGTACGGCGACATGGAGAACAAGCTGTTTGGGGGATTGCGGGGACGGGCTGCTCTGCGTTTGGTGGA
Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R L V D

TGATTTCTGTTGGTGACACCTCACCTCACCCACGCGAAAACCTTCTCAGGACCTGGTCCGAGGTGTCCCTGAGTATGGCTGCGTGGTGAACCTTGGGAAGACAGTGGTGAACCTCCC
D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P

TGTAGAAGACGAGGCCCTGGGTGGCAGGGCTTTTGTTCAGATGCCGGCCACGGCTATTCCCTGGTGGCGCTGCTGCTGGATACCCGGACCTGGAGGTGCAGAGCGACTACTCCAG
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S S

CTATGCCCCGACCTCCATCAGAGCCAGTCTCACCTTCAACCGCGGCTTCAAGGCTGGGAGGAACATGCGTCGCAAACTCTTTGGGGTCTTGGGCTGAAGTGTACAGCCTGTTTCTGGA
Y A R T S I R A S L T F N R G F K A G R N M R R K L F G V L R L K C H S L F L D

TTTGAGGTGAACAGCCTCCAGAGGTGTGCACCAACATCTACAAGATCCTCTGCTGCAGGCGTACAGGTTTACGCACTGTGTGCTGCAGCTCCATTTATCAGCAAGTTTGAAGAA
L Q V N S L Q T V C T N I Y K I L L L Q A Y R F H A C V L Q L P F H Q Q V W K N

CCCCACATTTTCTGCGCGTCATCTCTGACAGGCCCTCCCTCTGCTACTCCATCCTGAAAGCCAAGAACGAGGGATGTCGCTGGGGGCCAAGGGCGCCGCGCCCTCTGCCCTCCGA
P T F F L R V I S D T A S L C Y S I L K A K N A G M S L G A K G A A G P L P S E

GGCGTGCAGTGGCTGTGCCACCAAGCATTCTGCTCAAGCTGACTCGACACCGTGTACCTACGTGCCACTCTGGGGTCACTCAGGACAGCCAGACGAGCTGAGTCGGAAGCTCCC
A V Q W L C H Q A F L L K L T R H R V T Y V P L L G S L R T A Q T Q L S R K L P

GGGGACGAGCTGACTGCCCTGGAGGGCCGAGCCAACCGGCACTGCCCTCAGACTTCAAGACCATCTGGAGTGATGGCCACCCGCCACAGCCAGGCCGAGAGCAGACACGAGCAGCC
G T T L T A L E A A A N P A L P S D F K T I L D

CTGTACGCCGGGCTCTACGTCCAGGGAGGGAGGGGGGCCACACCCAGGCCCGCAGCTGGGAGTCTGAGGCTGAGTGAGTGTGTTGGCCGAGGCTGCATGTCCGGCTGAAGGCT
GAGTGTCGGGCTGAGGCTGAGCGAGTGTCCAGCAAGGGCTGAGTGTCAGCACACCTGCCGTCTTCACTTCCCACAGGCTGGCGCTCGGCTCCACCCAGGGCCAGCTTTTCTCAC
CAGGAGCCGGGCTTCCACTCCCCACATAGGAATAGTCCATCCCCAGATTGCGCATTTGTTACCCCTCGCCCTGCCCTCCTTTGCCCTCCACCCCCACCATCCAGGTGGAGACCTGAGAA

Fig. 11P



GGACCTGGGAGCTCTGGGAATTTGGAGTGACCAAAGGTGTGCCCTGTACACAGGCGAGGACCTGCACCTGGATGGGGTCCCTGTGGGTCAAATTGGGGGGAGGTGCTGTGGGAGTAA

AATACTGAATATATGAGTTTTTCAGTTTTGA

Fig. 11Q



Truncated protein that lacks motif A

ATGCCGCGGCTCCCCGCTGCCGAGCGTGGCTCCCTGCTGCGCAGCCACTACCGCGAGGTGCTGCCGCTGGCCAGGTTCTGT
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCTGGGGCCCCAGGGCTGGCGGTGGTGCAGCGGGGACCCGGCGGCTTTCCGCGCGTGGTGGCCAGTGCCTGGTGTGCGTGGCTGGGACGCACGGCCGCCCCCGCCG
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

CCCCCTCTTCGCGAGGTGCTGCTGCTGAAGGAGCTGGTGGCCGAGTGTGCAGAGGCTGTGCGAGCGGGCGGAAGAACGTGCTGGCTTCGGCTTCGCGTGTGGACGGGGCCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCCGAGGCTTACCACAGCGTGGCAGCTACCTGCCAACACGGTGACGACGCACTGCGGGGAGCGGGGCTGGGGCTGCTGCTGCGCCGCTGGGCGACGACGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGTTACCTGCTGGCAGCTGCGGCTCTTTGTGCTGGTGGCTCCAGCTGCGCTACAGGTGTGCGGGCGCCGCTGTACCAGCTCGGCGTGGCACTAGGCCCCCGCCCGC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACACGCTAGTGGACCCGAAGGCTGTGGATGCGAACGGGCTGGAACCATAGCGTCAGGAGGGCGGGTCCCCCTGGGCTGCCAGCCCCGGGTGCGAGGAGCGCGGGGCGAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCGAAGTCTGCCGTTGCCAAGAGGCCAGCGTGGCGCTGCCCTGAGCGGAGCGGACCCCGTTGGGCGGGGTCTGGGCCACCCGGGCGAGGACGCTGGACCGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGGTTCTGTGTGTACCTGCCAGACCCGCGAAGAAGCCACCTCTTTGGAGGGTGGCTCTGTGGCAGCGCCACTCCACCCATCCGTGGGCGCCAGCACCACCGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGGGCCACCACGCTCCCTGGGACAGCCTTGTCCCCGGTGTACGCGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGAGCTGCGGCCCTCTTCTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

CTCTCGAGGCGCAGCTGACTGGCGCTCGGAGGCTCGTGGAGACCATTTTCTGGGTTCCAGGCGCTGGATGCCAGGACTCCCCGAGGTTGCCCCGCTGCCAGCGCTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATGCGGCCCTGTTTCTGGAGCTGCTTGGGAACACGCGAGTGCCCTACGGGGTGTCTCTAAGACGCACTGCGCGTGGAGCTGCGGTACCCCGAGCGGCTGTGTGCGCG
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

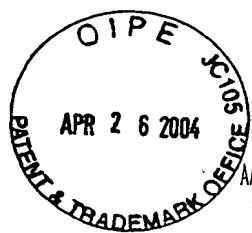
GGAGAAGCCCCAGGGCTGTGTGGCGCCCCGAGGAGGAGACAGACCCCGTGGCTGGTGCAGCTGCTCCGCGACACAGAGCCCTGGCAGGTGTACGGCTTCGTGCGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTGGCCCGAGGCTCTGGGGCTCCAGGCAACGAACGCGCTTCTCAGGAACCAAGAAGTTCTCTCTGGGAAGCATGCCAAGCTCTCGTGCAGGAGCT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

GACGTGAAGATGAGCGTGGGAGTGGCTTGGCTGGCAGGAGCCAGGGGTTGGCTGTGTTCCGCGCGCAGAGCACCGTCTGCGTGAGGAGATCTGGCCAAGTTCTGCAGTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L

GATGAGTGTGTACGTCGAGCTGCTCAGGCTTTCTTTTATGTACGAGACACGTTTCAAAGAAGAGGCTCTTTTCTACCGAAGAGTGTGTGGAGCAAGTTGCAAGATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G

Fig. 11R



AATCAGACAGCACTTGAAGAGGGTGCAGCTGCGGGAGCTGTGGAAGCAGAGGTGAGGCAGCATCGGAAGCCAGGCCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCAAGCCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D

CGGGCTCGGGCGATTGTGAACATGGACTACGTGCTGGGAGCCAGAACGTTCCGCAGAGAAAAGGGCCGAGCGTCTACCTCGAGGGTGAAGGCACTGTTACGCGTGTCAACTACGA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E

GCGGGCGGGCGCCCGCCCTCTGGGGCCCTGTGCTGGGCTGGACGATATCCACAGGGCTGGCGCACCTTCGTGCTGCGTGTGCGGGCCAGGACCCGCGCCTGAGCTGTACTT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F

TGTCAAG GACAGGCTCAGGAGGTGATCGCCAGCATCATCAACCCAGAACGCTACTGCGTGGTGGTATGCCGTGGTCCA
V K D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q

GAAGGCGCCCATGGGCAGTCCGCAAGGCCTTCAAGAGCCACGTCTTACCTTGACAGACCTCCAGCGTACATGCGACAGTTGCTGGCTCACCTGCAGGAGACAGCCGCTGAGGGA
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D

TGCCGTGTCATCGAGCAGAGTCTCCCTGAATGAGGCCAGCAGTGGCTCTTCGACGTCTTCTACGCTTCATGTGCCACACGCCGTGCGCATCAGGGGCAAGTCTACGTCCAGTG
A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C

CCAGGGGATCCCGAGGGCTCCATCCTCTCCACGCTGCTCTGCAGCTGTGCTACGGCGACATGGAGAACAAGCTGTTTGGGGGATTGCGGGGACGGGCTGCTCTGCGTTTGGTGA
Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R L V D

TGATTTCTTGTGGTGACACCTCACCTCACCCACGCGAAAACCTTCTCAGGACCTGGTCCGAGGTGTCCTGAGTATGGCTGCGTGGTGAACCTTGCGAAGACAGTGGTGAACCTCCC
D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P

TGTAGAAGACGAGGCCCTGGGTGGCAGGCTTTTGTTCAGATGCCGCCCCAGGCCATTCCCTGGTGGGCTGCTGCTGGATACCGGACCTGGAGGTGCAGAGCGACTACTCCAG
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S R

GTGAGCGCACCTGGCGGAAGTGGAGCTGTGCCCGGCTGGGGCAGGTGCTGCTGCAAGGGCGTTGCGTCCACCTCTGCTTCCGTGTGGGGCAGGGCACTGCCAATCCCAAGGGTCAGA
*

TGCCACAGGGTCCCCCTCGTCCCATCTGGGGCTGAGCACAATGCATCTTTCTGTGGGAGTGAGGGTGCCCTCACAACGGGAGCAGTTTTCTGTGCTATTTTGGTAA....

Fig. 11S

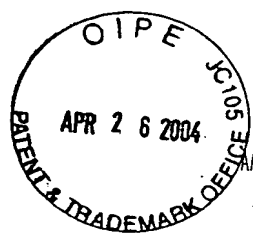


Lacks motif A and altered C-terminus

ATGCCGCGCGCTCCCGCTGCCGAGCGTGCCTCCCTGCTGCGCAGCCACTACCGGAGGTGCTGCCGTGGCCACGTTGCTG
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCTGGGGCCCCAGGGCTGGCGCTGGTGCAGCGGGGACCCGGCGCTTTCGCGCGTGGTGGCCAGTGCCTGGTGTGCGTGGCTGGGACGACGGCGCCCCCGCGC
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A
CCCCCTCTCCGCGAGGTGCTGCTGAAGGAGCTGGTGGCCGAGTGTGCAGAGGCTGTGCGAGCGCGCGGAAGAACGTGCTGGCTTCGGCTTCCGCTGCTGGAGGGGGCGG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R
CGGGGGCCCCCGAGGGCTTACCACAGCGTGCAGCTACCTGCCAACAGGTGACGACGCACTCGGGGGAGCGGGGCTGGGGGCTGCTGCTGCGCGCTGGGACGACGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V
GCTGTTACCTGCTGGCAGCTGCGCGCTTTTGTGCTGGTGGCTCCAGCTGCGCTACAGGTGTGGGGCGCGCTGTACCAGCTGCGCGCTGCCACTAGGCGCGCGCGCGC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P
ACAGCTAGTGGACCCGAAGCGTCTGGGATGCGAACGGCGCTGGAACCATAGCGTCAGGAGGGCGGGTCCCCCTGGGCTGCCAGCCCGGGTGCAGGAGGCGGGGGCAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A
CAGCGAAGTCTGCCGTTGCCAAGAGGGCCAGGCGTGGCGCTGCCCTGAGCGGAGCGGACGCCGTTGGGCGGGGTCTGGGCGCCACCGGGCAGGACGCGTGACGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R
TGGTTCTGTGTGTGTCACCTGCCAGACCCGCGAAGAAGCCACCTCTTTGGAGGGTGGCGCTCTGTGCGCAGCGCCACTCCACCCATCCGTGGGCGCGCAGCACCAGCGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P
ATCCACATCGCGCCACCAGTCCCTGGGACAGCGCTTGTCCCCGGTGTACCGCGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGTGGCGCCCTCTCTCTACTAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S
CTCTGAGGCGCAGCTGACTGGCGCTCGGAGGCTCGTGGAGACCATTTTGTGGTTCCAGGCGCTGGATGCCAGGACTCCCCGAGGTGGCGCGCTGCCAGCGCTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q
AATGCGCCCCCTGTTTCTGGAGCTGCTTGGGAACACGCGCAGTGCCCTACGGGGTGTCTCTAAGACGCACTGCCGCTGCGAGCTGCGGTACCCACAGCGCGGTGTCTGTGCCG
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R
GGAGAAGCCCCAGGGCTCTGTGGCGCCCCCGAGGAGGAGACAGACCCCGTGCCTGGTGCAGTGTCTCGCCAGCAGCAGCCCTGGCAGGTGTACGGCTTCTGTGGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C
CCTGCGCGGCTGGTGGCCCCAGGCTCTGGGGCTCCAGGCACAACAGCGCGCTTCTCAGGAACACCAAGAAGTTCATCTCCCTGGGGAAGCATGCCAAGCTCTGCTGCAGGAGT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L
GACGTGGAAGATGAGCGTGGGACTGCGCTTGGCTGCGCAGGAGCCCGGGTGGCTGTGTTCCGGCGCAGAGCAGCTGCGTGAGGAGATCTGGCAAGTCTCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTGTACGTCGTCGAGCTGCTCAGGTCTTTCTTTATGTACGGAGACCGTTTCAAAAGAACAGGCTCTTTTCTACCGGAAGAGTGTCTGGAGCAAGTTGCAAGCATGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G

Fig. 11T



ATCAGACAGCACTTGAAGAGGGTGCAGCTGCGGAGCTGTGGAAGCAGAGGTCAGGCAGCATCGGGAAGCCAGGCCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCAAGCCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D

CGGGCTCGGCCGATTGTGAACATGGACTACGTGCTGGGAGCCAGAAGCTTCCGAGAGAAAAGAGGGCCGAGCGTCTACCTCGAGGGTGAAGGCACTGTTACGGCTGCTCAACTACGA
G L R P I V N M D Y V V G A R T F R R E K R A E R L T S R V K A L F S V L N Y E

GCGGGCGGGCGCCCGCCCTCTGCTGGGCGCTGTGCTGGGCGCTGGACGATATCCAGGGCTGGCGACCTTCGTGCTGCGTGTGCGGGCCAGGACCCGCGCTGAGCTGTACTT
R A R R P G L L G A S V L G L D D I H R A W R T F V L R V R A Q D P P P E L Y F

TGTCAAG
V K

GACAGGCTCAGGAGGTATCGCCAGCATCATCAACCCAGAACAGTACTGCGTGGCTGGTATGCCGTGGTCCA
D R L T E V I A S I I K P Q N T Y C V R R Y A V V Q

GAAGGCCGCCATGGGCAGTCCGCAAGGCTTCAAGAGCCAGTCTCTACCTTGACAGACCTCCAGCCGTACATGCGACAGTTCGTGGCTACCTGCAGGAGACAGCCCGCTGAGGGA
K A A H G H V R K A F K S H V S T L T D L Q P Y M R Q F V A H L Q E T S P L R D

TGCGTGTGTCATCGAGCAGAGCTCCTCCCTGAATGAGGCCAGCAGTGGCTCTTCGACGTCTTCTACGCTTCATGTGCCACCAGCCGTGCGCATCAGGGGCAAGTCTACGTCCAGTG
A V V I E Q S S S L N E A S S G L F D V F L R F M C H H A V R I R G K S Y V Q C

CCAGGGGATCCCGAGGGCTCCATCCTCTCCAGCTGCTCTGCAGCCTGTGTACGGGACATGGAGAACAAGCTGTTTGGGGGATTGCGGGGACGGGCTGCTCTGCGTTTGGTGA
Q G I P Q G S I L S T L L C S L C Y G D M E N K L F A G I R R D G L L L R L V D

TGATTTCTTGTGGTGACACCTCACCTCACCCACGCGAAACCTTCTCAGGACCTGGTCCGAGGTGTCCCTGAGTATGGCTGCGTGGTGAACCTTGGGAAGACAGTGGTGAACCTCCC
D F L L V T P H L T H A K T F L R T L V R G V P E Y G C V V N L R K T V V N F P

TGTAGAAGACGAGGCCCTGGGTGGCAGGGCTTTTGTTCAGATGCCGGCCACGGCTATTCCCTGGTGGGCTGCTGCTGGATACCCGGACCTGGAGGTGCAGAGCGACTACTCCAG
V E D E A L G G T A F V Q M P A H G L F P W C G L L L D T R T L E V Q S D Y S S

CTATGCCCGGACCTCCATCAGAGCAGTCTCACCTTCAACCGCGGCTTCAAGGCTGGGAGGAACATGCGTCCGAAACTCTTTGGGGTCTTGGGCTGAAGTGTACAGCCTGTTTCTGGA
Y A R T S I R A S L T F N R G F K A G R N M R R K L F G V L R L K C H S L F L D

TTTGAGGTGAACAGCCTCCAGACGGTGTGCACCAACATCTACAAGATCCTCTGCTGAGGCGTACAGGTTTACGCATGTGTGCTGCAGCTCCCATTTATCAGCAAGTTTGAAGAA
L Q V N S L Q T V C T N I Y K I L L L Q A Y R F H A C V L Q L P F H Q Q V W K N

CCCCACATTTTCTGCGGTATCTCTGACAGGCTCCCTCTGCTACTCCATCCTGAAAGCCAAGAAGCAGGGATGTGCTGGGGGCCAAGGGCGCCGCGGCTCTGCCCTCCGA
P T F F L R V I S D T A S L C Y S I L K A K N A E

CCGAAGAAAACATTTCTGTGCTGACTCTGCGGTGCTTGGGT
E E N I L V V T P A V L G S

GGGACAGCCAGAGATGGAGCCACCCGAGACCGTGGGTGTGGGAGCTTTCCGGTGTCTCTGGGAGGGGAGTTGGGCTGGGCTGTGACTCCTCAGCCTCTGTTTTCCCCCAG
G Q P E M E P P R R P S G V G S F P V S P G R G V G L G L *

Fig. 11U



Truncated telomerase (ver. 2)

ATGCCGCGCGCTCCCCGCTGCCGAGCGTGCCTCCCTGCTGCCAGCCACTACCGGAGGTGCTGCCGCTGGCCACGTTCTGT
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCTGGGGCCCCAGGGCTGGCGGTGGTGACGCGGGGACCGGGGCTTTCCGCGGCTGGTGGCCAGTGCTGGTGTGCGTGGCCGGGACGACGGCCCGCCCGCGCG
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

GGCTCCCCGGGTGGCGTCCGGTGGGGTTGAGGGCGGCGGGGGGAACAGCGACATCGGAGAGCAGCGAGGCGACTCAGGGCGCTTCCCCCGCAGGTG
G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G R F P R R
A S P G S A S G W G * G R P G G T S D M R R A A Q A T Q G A S P A G
P P R G R R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V

CCCTCCTTCCGCCAGGTGCTGCTGAAGGAGCTGGTGGCCGAGTGTGACAGGCTGTGCGAGCGCGCGGAAGAAGCTGCTGGCTTCCGCTTCCGCTGCTGGACGGGGCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCCGAGGCTTACCACAGCGTGGCAGCTACCTGCCAACAGGTGACCGACGCACTGCGGGGAGCGGGGCTGGGGCTGCTGCTGCCCGCGTGGGCGACGACGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGGTTCACCTGCTGGCAGCTGCGCGCTTTTGTGCTGGTGGCTCCAGCTGCGCTACCAGGTGTGCGGGCGCGCTGTACCAGCTGCGCGTGGCACTCAGGCGCGCGCGCGC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACAGCTAGTGGACCCGAGGCGTCTGGATGCGAACGGGCTGGAACCATAGCGTACGGGAGGCGGGGTCCCCCTGGGCTGCCAGCCCCGGGTGCGAGGAGCGCGGGGCGAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCCGAAGTCTGCCGTTGCCAAGAGGCCAGGCGTGGCGTCCCTGAGCGGAGCGGACGCCGTTGGGCGAGGGTCTGGGCCACCCGGGCGAGGCGGCGTGGACGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGGTTTCTGTGGTGTACCTGCCAGACCCGCCAAGAAGCCACCTTTTGGAGGGTGGCTCTGTGGCAGCGGCACTCCACCCATCCGTGGGCGCGGACGACGCGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGCGGCCACGCTCCCTGGGACAGCCTTGTCCCCGGGTGACGCGAGACCAAGCACTTCTCTACTCTCTCAGGCGACAAGGAGCAGCTGCGGCCCTCTTCTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

CTCTGAGGCGCAGCTGACTGGCGCTCGGAGGCTCGTGGAGACCATCTTTCTGGGTTCCAGGCGCTGGATGCCAGGGACTCCCGCAGGTTGCCCGGCTGCCCCAGCGCTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATGCGGCGCTGTTCTGGAGCTGCTTGGGAACACGCGCAGTGGCCCTACGGGGTGTCTCTCAAGACGCACTGCCGCTGCGAGCTGCGGTACCCAGCAGCGGCTGTGTGCGCG
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

GGAGAAGCCAGGCTCTGTGGCGGCCCCGAGGAGGAGACAGACCCCGTGGCTGGTGCAGTGTCTCGCCAGCAGCAGGCGCTGGCAGGTGTACGGCTTCTGTGCGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTGGCCCCAGGCTCTGGGGCTCCAGGCACAACGAGCGGCTTCTCTCAGGAACCAAGAAGTTCATCTCCCTGGGAAGCATGCCAAGCTCTGCTGCAGGAGCT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

Fig. 11V



GACGTGGAAGATGAGCGTGCGGGACTGCGCTTGGCTGCGCAGGAGCCAGGGGTTGGCTGTGTTCCGGCCGAGAGCACCCTGCGTGAGGAGATCCTGGCCAAGTTCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTGTACGTGCGAGCTGCTCAGGCTTTTCTTTTATGTCACGGAGACCAGGTTTCAAAGAACAGGCTCTTTTCTACCGGAAGAGTGTCTGGAGCAAGTTGCAAAGCATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
AAT--NNN--GACAGTCACCAGGGGGTTGACCGCGGACTGGGCGTCCCAGGGTTGACTATAGGACCAGGTGTCCAGGTGCCCTGCAAGTAGAGGGGCTCTCAGAGGCGTCTGGCTGG
CATGGGTGGACGTGGCCCCGGGATGGCCTTCTGCGTGTGCTGCCGTGGGTGCCCTGAGCCCTCACTGAGTCGGTGGGGGCTTGTGGCTTCCCGTGAGCTTCCCCCTAGTCTGTTGTCTG
GCTGAGCAAGCCTCCTGAGGGGCTCTCTATTG...

Fig. 11W



Truncated protein 1 (ver. 2)

ATGCCGCGCGCTCCCGCTGCCGAGCGTGCCTCCCTGCTGCCGAGCCACTACCGCAGGCTGCCGCTGCCACGTTCTG
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCTGGGGCCAGGGCTGGCGGTGGTGACGCGGGGACCGCGGCTTTCCGCGCGTGGTGGCCAGTGCCCTGGTGTGCTGCCCTGGGACGACGCGCGCCCCCGCGC
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

GGCTCCCCGGGTCCGCTCCGCTGGGTTGAGGGCGCGGGGGGAACAGCGACATGCCGAGAGCAGCGAGGCACTAGGGCGCTTCCCCGCGAGTG
G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G R F P R R
A S P G S A S G W G * G R P G G T S D M R R A A Q A T Q G A S P A G
P P R G R R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V

CCCCCTCTCCGCCAGGTGCTCTGCTGAAGGAGTGGTGGCCGAGTGTGCGAGGCTGTGCGAGCGCGCGAAGAAGTGTGGCTTCGGCTTCGCGCTGTGACGGGGCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCCGAGGCTTACCACAGCGTGGCAGCTACCTGCCCAACACGGTGACCGACGACTGCGGGGAGCGGGGCTGGGGCTGCTGCTGCCCGCTGGGCGACGACGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGGTTACCTGCTGGCAGCTGCGCGCTTTTGTGCTGGTGGCTCCAGCTGCGCTACAGGTGTGCGGGCGCGCTGTACCAGCTGCGGCTGCCACTCAGGCCGCGCCCCCGC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACAGCTAGTGGACCCCAAGGCGTCTGGATGCGAACGGGCTGGAACCATAGCGTCAGGAGGCGGGGTCCCCCTGGGCTGCCAGCCCCGGGTGCCAGGAGCGCGGGGCGAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCGAAGTGTCCGTTGCCAAGAGGCCAGGCGTGGCGCTGCCCCGAGCGGAGCGGCGCCGTTGGGCGAGGGTCTGGGCCCCACCGGCGAGGACGCGTGGACGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGGTTTGTGTGGTGTACCTGCCAGACCGCGAAGAAGCCACCTTTTGGAGGGTGGCTCTCTGGCAGCGCCACTCCACCCATCCGTGGGCGGCCAGCACCACGGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGCGCCACCAGTCCCTGGGACAGCCTTGCCCCGGGTACGCCGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGTGGCGCCTCTTCTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

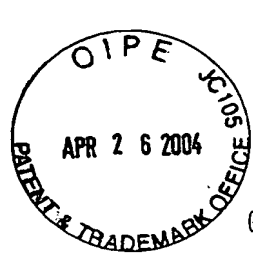
CTCTGAGGCGCCAGCTGACTGGCGCTCGGAGGCTCGTGAGACCATCTTTCTGGTTCCAGGCGCTGGATGCCAGGGACTCCCCGAGGTGGCCCGCTGCCCGAGGCTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATCGGGCCCTGTTTCTGGAGTGTCTGGGAACACGCGAGTGGCCCTACGGGTGCTCCTCAAGACGCACTGCCGCTGCGAGCTGCGGTACCCAGCAGCGGTGTGTGTGCCG
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

GGAGAAGCCCGAGGCTCTGTGGCGCCCCGAGGAGGAGACAGACCCCGTGGCTGGTGCAGTGTCCGCCAGCAGCAGCCCTGGCAGGTGTACGGCTTCGTGGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGGCTGGTGGCCCCAGGCTCTGGGGCTCCAGGCACAACGAACCGCTTCTCAGGAACACCAAGAAGTTCTCTCTGGGGAAGCATGCCAAGCTCTCGTGCAGGAGCT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

Fig. 11X



GACGTGGAAGATGAGCGTGGGGACTGCGCTTGGCTGCGCAGGAGCCAGGGGTTGGCTGTGTTCCGGCCGAGAGCACCCTGCGTGAGGAGATCCTGGCCAAGTTCCTGCACTGGCT
T W K M S V R D C A W L R R S P G V G C V P A A E H R L R E E I L A K F L H W L
GATGAGTGTGTACGTGCTCGAGCTGCTCAGGTCTTTCTTTTATGTCACGGAGACCAGCTTTCAAAGAACAGGCTCTTTTCTACCGGAAGAGTGTCTGGAGCAAGTTCGAAAGCATTGG
M S V Y V V E L L R S F F Y V T E T T F Q K N R L F F Y R K S V W S K L Q S I G
AATCAGACAGCACTTGAAGAGGGTGCAGCTGCGGGAGCTGTCGGAAGCAGAGGTACGGCAGCATCGGAAGCCAGGCCCGCCCTGCTGACGTCCAGACTCCGCTTCATCCCCAAGCCTGA
I R Q H L K R V Q L R E L S E A E V R Q H R E A R P A L L T S R L R F I P K P D

GTGGCTGTGCTTTGGTTTAACTTCCTTTTAAACCAGAA
V A V L W F T F L F N Q K

CGGGCTGCGGCCGATTGTGAACATGGACTACGTGCTGGGAGCCAGAAGCTTCCGAGAGAAAAGAGGCCGAGCGTCTCACCTCGAGGGTGAAGGCACTGTTACGCGTGCTCAACTACGA
G L R P I V N M D Y V V G A R T F R R E K R P S V S F R G *

Fig. 11Y



Truncated protein 2 (ver. 2)

ATGCCGCGCTCCCCGCTGCCGAGCGTGGCTCCCTGCTGCGCAGCCACTACCGGAGGTGCTGCCGCTGGCCACGTTCTG
M P R A P R C R A V R S L L R S H Y R E V L P L A T F V

CGGCGCTGGGGCCCCAGGGCTGGCGCTGGTGACGCGGGGACCGGGCTTTCCGCGCTGGTGCCAGTGCTGCTGGGACGACGCGCGCCCCCGCGC
R R L G P Q G W R L V Q R G D P A A F R A L V A Q C L V C V P W D A R P P P A A

GGCCTCCCCGGGGTGGCGCTCCGCTGGGGTTAGGGCGGGGGGGAACAGCGACATGCGGAGAGCAGCGCAGGCGACTCAGGGCGCTTCCCCGCGAGTG
G L P G V G V R L G L R A A G G N Q R H A E S S A G D S G R F P R R
A S P G S A S G W G * G R P G G T S D M R R A A Q A T Q G A S P A G
P P R G R R P A G V E G G R G E P A T C G E Q R R R L R A L P P Q V

CCCCCTTCCGCGAGGTGCTGCTGAAGGAGCTGGTGGCCGAGTGCTGCGAGCGCGCGGAAGAACGTGCTGGCTTCCGCTTCCGCTGCTGGACGGGGCCCCG
P S F R Q V S C L K E L V A R V L Q R L C E R G A K N V L A F G F A L L D G A R

CGGGGGCCCCAGGGCTTACCACAGCGTGGCGAGTACCTGCCAACAGGTGACCGACGCACTCGGGGGAGCGGGGCTGGGGCTGCTGCTGCGCGCGTGGGCGACGAGT
G G P P E A F T T S V R S Y L P N T V T D A L R G S G A W G L L L R R V G D D V

GCTGTTACCTGCTGGCAGCTGCGCGCTCTTTGTGCTGGTGGCTCCAGCTGCGCTACCAGGTGTGGGGCGCGCGTGTACCAGCTCGGCGCTGCCACTCAGGCCGGCCCCCGC
L V H L L A R C A L F V L V A P S C A Y Q V C G P P L Y Q L G A A T Q A R P P P

ACACGCTAGTGGACCCGAAGCGCTGGGATGCGAACGGGCTGGAACCATAGCGTCAGGGAGGCGGGGTCCCCTGGGCTGCCAGCCCCGGGTGCGAGGAGCGGGGGCAGTGC
H A S G P R R R L G C E R A W N H S V R E A G V P L G L P A P G A R R R G G S A

CAGCCGAAGTCTGCGTTGCCAAGAGGCCAGGCGTGGCGTGGCTGAGCGGAGCGGACGCCGTTGGGAGGGGTCTGGGCCCCACCGGCGAGGACGCGTGGACGAGTGACCG
S R S L P L P K R P R R G A A P E P E R T P V G Q G S W A H P G R T R G P S D R

TGTTTCTGTGTGTGCTCCTGCCAGACCCGCGAAGAAGCCACCTTTTGGAGGGTGGCTCTCTGGCAGCGGCACTCCACCCATCCGTGGGCGCGCAGCACCGGGGGCCCCC
G F C V V S P A R P A E E A T S L E G A L S G T R H S H P S V G R Q H H A G P P

ATCCACATCGGGCCACCAGTCCCTGGGACAGCCTTGTCCTCCCGGTGACCGGAGACCAAGCACTTCTCTACTCTCAGGCGACAAGGAGCAGTGGCGCCCTCTCTACTCAG
S T S R P P R P W D T P C P P V Y A E T K H F L Y S S G D K E Q L R P S F L L S

CTCTGAGGCGCCAGCTGACTGGCGCTCGGAGGCTCGTGGAGACCATTTTCTGGTTCCAGGCGCTGGATGCCAGGGACTCCCCGAGGTGCCCCGCTGCCAGCGCTACTGGCA
S L R P S L T G A R R L V E T I F L G S R P W M P G T P R R L P R L P Q R Y W Q

AATGGGCCCCCTGTTTCTGAGGTGCTTGGGAACACGCGAGTGGCTTACGGGTGCTCCTCAAGACGCACTGCCGCTGCGAGCTGGGTACCCCAGCAGCGGTGTGTGTGCCCC
M R P L F L E L L G N H A Q C P Y G V L L K T H C P L R A A V T P A A G V C A R

GGAGAAGCCCCAGGGCTCTGTGGCGGCCCCGAGGAGGAGACAGACCCCCGCTGGCTGGTGACGCTGCTCGCCAGCAGCAGCCCTGGCAGGTGACGGCTTCGTGGGGCTG
E K P Q G S V A A P E E E D T D P R R L V Q L L R Q H S S P W Q V Y G F V R A C

CCTGCGCGCTGGTGGCCCCAGGCTCTGGGGCTCCAGGCACAACGAACGCCCTTCTCAGGAACCAAGAAGTTCTCTCCCTGGGGAAGCATGCCAAGCTCTCGTGCAGGAGCT
L R R L V P P G L W G S R H N E R R F L R N T K K F I S L G K H A K L S L Q E L

Fig. 11Z